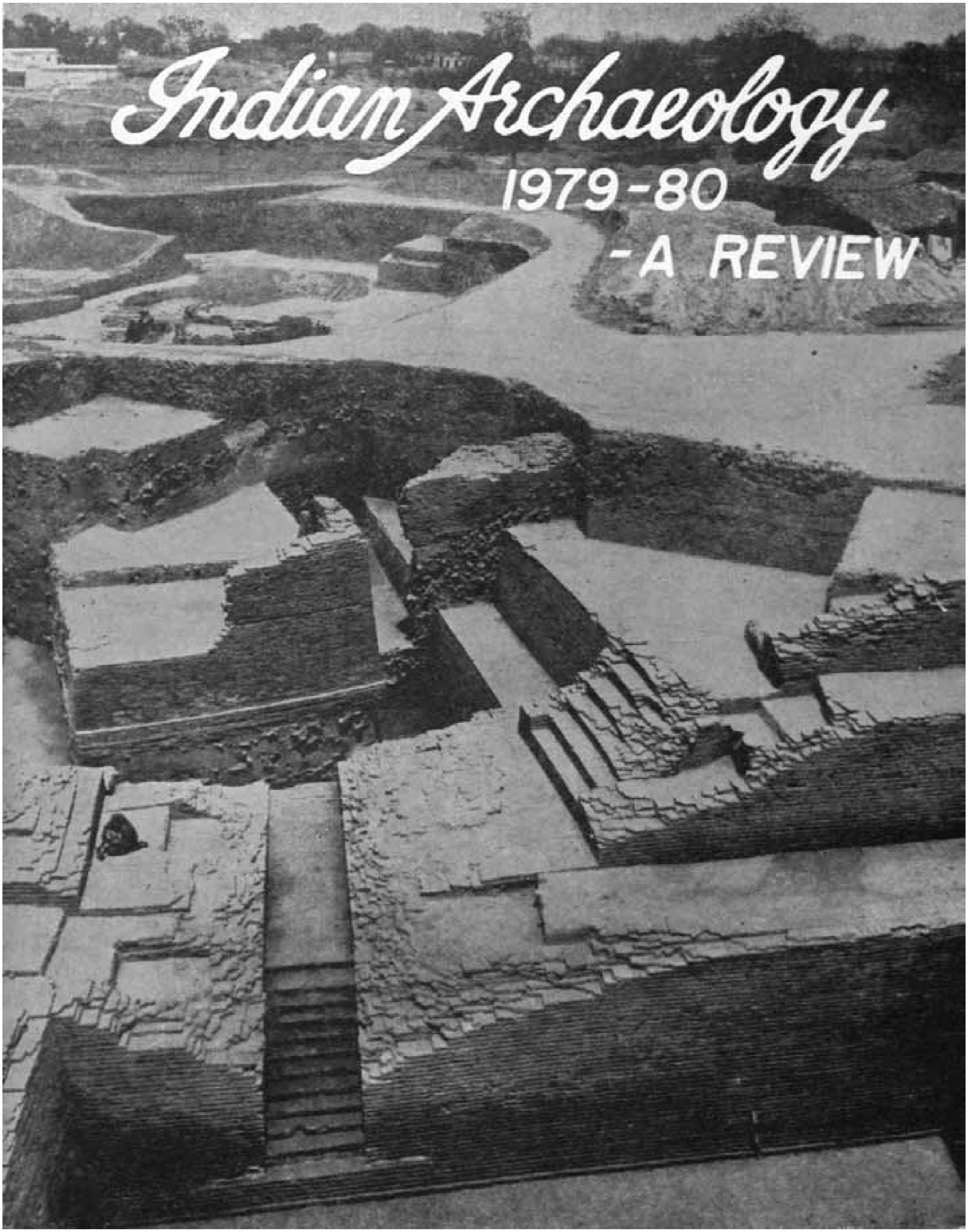

Indian Archaeology
1979-80
-A REVIEW

INDIAN ARCHAEOLOGY 1979-80

-A REVIEW

EDITED BY

DEBALA MITRA

Director General

Archaeological Survey of India

ARCHAEOLOGICAL SURVEY OF INDIA

GOVERNMENT OF INDIA

NEW DELHI

1983

Cover : Sringaverpur, excavated tank

Price : Rs. 65.00

PRINTED AT NABA MUDRAN PRIVATE LTD., CALCUTTA, 700004

PREFACE

This annual *Review,* like its predecessors, incorporates matter on archaeological activities in the country during the year 1979-80. As usual, the matter has come from various sources and I gratefully acknowledge the cooperation of those whose contributions have been utilized here. Evident as it is, a vast mass of material had to be handled, sorted, compiled and edited, and in the course of this exercise a few inaccuracies may have crept in for which I must apologize.

In the earlier issue of the *Review,* viz., 1978-79, the matter under Explorations and Excavations was presented in a different manner than that of the earlier issues. According to this new arrangement, two sub-sections—one for village-to-village surveys of antiquarian remains and the other for explorations and other problem-oriented surveys—were introduced. Likewise, a section under excavations had two sub-divisions: national projects and major excavations; and other excavations. This scheme of detailed classification may have its merits but the readers seem to face slight inconvenience in culling his facts, as he has to go through at least four sub-sections which deal with the activities in a particular State. Considering this we have reverted to the earlier arrangement of classifying the activities concerning explorations and excavations under each State.

Our hope to wipe out the arrears have not been fulfilled and I do not like to list out the problems besetting us in making the *Indian Archaeology—A Review* uptodate. We, however, hope that with the cooperation of our contributors we will soon be able to remove all backlog.

I take this Opportunity of thanking my colleagues in the Survey, particularly those in the Publications Section, for the cooperation that has been extended in bringing out this issue.

New Delhi 6
April, 1982

DEBALA MITRA

CONTENTS

INDIAN ARCHAEOLOGY 1979-80

—A REVIEW

I. EXPLORATIONS AND EXCAVATIONS

ANDHRA PRADESH

1. EXPLORATION IN DISTRICT ANANTAPUR.—In the course of exploration, Shri D. Hanumantha Rao of the South-Eastern Circle of the Archaeological Survey of India[1] discovered an ancient site at the northern foot of a hill, locally known as Akkamma-konda, in the revenue limits of Vontimidda in Kalyanadurga Taluk, yielding antiquities ranging from the neolithic to medieval period. In its vicinity was found a cluster of megalithic stone-circles having huge granitic slabs for circle stones and cairn packing.

2. EXCAVATION AT NANDALUR, DISTRICT CUDDAPAH.—The Department of Archaeology and Museums, Government of Andhra Pradesh, conducted excavation at the Buddhist site called Lanjakanumalagutta, near Nandalur.

Excavation in Site II revealed at different levels on the hillock ten stupas built on terraced platforms. Among the row of stupas, oriented east-west, the larger ones appear to be of earlier phase and the smaller ones or votive stupas protected by revetment walls, are of a later phase. The site seems to have flourished from about the second century B.C. to third-fourth century A.D.

3. EXCAVATION AT RAJAHMUNDRY, DISTRICT EAST GODAVARI.—The Department of Archaeology and Museums, Government of Andhra Pradesh, carried out a small-scale excava tion with a view to establishing the cultural sequence of Rajahmundry on the eastern bank of the liver Godavari.

Excavation revealed that the earliest habitational deposit belonged to the second-fourth century A.D., yielding structural remains such, as stupa and a wall of a monastery built of baked bricks of the sizes 55 x22 x7 and 45x22 x 7 cm (22 x 9 x 3 and 18 x9 x 3 in respectively) and pottery represented by red polished ware and Arretine Ware. The succeeding level, represented by 80 cm thick deposit, did not yield any brick structure. However, three bronze figures—a female holding a parrot and accompanied by an attendant, Hanuman in *anjali-mudra* and a bull—and an image of Ganesa in stone were recovered from this level. The succeeding level was represented by 70 cm thick deposit datable to the twelfth-thirteenth century A.D. The remains of a shrine, with two cells (2*3 X 1'7 m internally), built of baked bricks (size: 30 x20 x 7 cm) with walls of 2-3 in thickness were encountered in the level which is followed by yet another stratum yielding the remains of a shrine, besides a few iron cannon and stone balls. As the latest level of the site belongs to eighteenth century A.D., it may be assumed that the site was occupied from second century to eighteenth century A.D.

4. EXPLORATION IN. DISTRICT KRISHNA.—The South-Eastern Circle of the Survey, in the course of exploration, noticed black-and-red ware and early historical pottery at Dachavaram,

[x]The Archaeological Survey of India is referred to in the following pages as the 'Survey'.

Damuluru, Kankata, Mukkoller and Valamaunadu, vestiges of Stone Age culture and pottery at Medrametha and remains of a neolithic culture on a granite hill near Saunak.

Shri G. L. N. Sastry of the above mentioned Circle, in the course of exploration, noticed the following sites of archaeological interest.

District	*Taluk*	*Village/site*	*Cultural assemblage*
Krishna	Bandar	Amudalapalle	Medieval
-do-	-do-	Arthamur	Early historical and medieval pottery and sculptures
-do-	-do-	Devarapalle	Early historical and medieval
-do-	-do-	Kanu.ru	Medieval pottery, sculptures and inscription
-do-	-do-	Kara Agraharam	Medieval pottery and sculptures
-do-	-do-	Korlapadu	Early historical
-do-	-do-	Kruttivennu	Medieval pottery and sculptures
-do-	-do-	Kummalapudi	Early historical and medieval
-do-	-do-	Laksmipuram	Early historical and medieval
-do-	-do-	Muttarasu-kona	Early historical
-do-	-do-	Nagavaram	Early historical and medieval
-do-	-do-	Pedana	Medieval sculptures
-do-	-do-	Tavisepudi	Late medieval pottery and inscriptions
-do-	-do-	Uppalakalavagunta	Early historical pottery, medieval .sculptures and inscriptions
-do-	-do-	Urivi	Early historical and medieval
-do-	-do-	Majeru	Medieval
-do-	-do-	Nidumolu	Neolithic and early historical
-do-	Kaikaluru	Peda Tummidi	Early historical and medieval pottery and sculptures
-do-	Nandigama	Anigandlapadu	Early historical and medieval pottery, sculptures and inscriptions
-do-	-do-	Damuluru	Early historical and medieval pottery, and sculptures
-do-	-do-	Doddadevarapadu	Early historical and medieval pottery, and sculptures
-do-	-do-	Jayanthi	Medieval pottery and sculptures
-do-	-do-	Kanchala	Early historical
-do-	-do-	Magallu	Early historical and medieval pottery and inscriptions
-do-	-do-	Ramireddipalle	Early historical and medieval pottery and minor antiquities
-do-	-do-	Veerlapadu	Early historical

5. EXCAVATION AT SATANIKOTA, DISTRICT KURNOOL.—The Excavations Branch (I) of the Survey, Nagpur, resumed *(Indian Archaeology 1978-79—A Review,* pp. 35)* excavation at

[1]This publication is referred to in the following pages by the year only.

Satanikota, under the direction of Shri N. G. Ghosh, assisted by Dr H, N. Singh and Sarvashri H. P. Sinha, D. K. Ambastha, K. Ismail, S. K. Mittra, Mohinder Singh, N. G. Banerjee, S. V, Sutaone, P. M. Bhope, K. M. Girhe, R. K. Dwivedi, R. K.. Roy, M, U. Qureshi, Pyare Singh, B. K. Rudra and A. U. Ganar, with a view to exposing some of the megalithic burials situated nearly 2-5 km east of the village and scattered in an area of 10 hectares in three clusters, namely A, B and G, along the right bank of the river Tungabhadra,

Prior to the advent of the megalithic people, the site had been occupied by the Stone Age man as is evident from the occurrence of the tools belonging to the Middle Palaeolithic and Mesolithic ages in the High Level Gravel occurring at an elevation of 24 m above the present bed level of the river Tungabhadra. The gravel laterally (north-south) spreads ■ 500 m at the site, and its longitudinal extent could be traced roughly over a distance of 25 km to the east of the site,

Excavation at the highest contour revealed one metre thick deposit of gravel lying unconformably on the weathered and undulated limestone bed-rock. The artefacts -were recovered from the High Level Gravel up to a depth of 25-30 cm in a diminishing frequency. The gravel seems to be the earliest Quaternary deposit in the area, and it is obvious that the Stone Age man much after the formation of the gravel had appeared on the scene attracted mainly by an easy availability of raw materials such as quartzite, chert, jasper and agate in convenient sizes in the form of pebbles for manufacturing tools. The Middle Palaeolithic tools are represented by scrapers of various types viz., side, thumb-nail, hollow, convex, concave, apart from points, of various types, awls and borers. The tools are mostly on quartzite, chert occupying the second place.

The Mesolithic tools are also found from the surface as well as excavation along with the Middle Palaeolithic tools. The tools recovered from the excavation belong either to a disturbed or to a re-deposited stratum. The tool types comprise mostly long blades, points, crescentic points and lunates made on chert, chalcedony, agate and quartz. A number of fluted cores and flakes having crested ridge are also noticed. A large number of waste flakes found from the area indicate it to be factory site.

Out of twenty-nine megalithic burials which escaped disturbance due to reclamation of land for cultivation, only eight, representing three different types viz., (I) cist with passage, further divisible into sub-types A and B, (II) pit-circle with sub-types A and B, and (III) cist-circle, were excavated.

TYPE I is represented by cist with passage (pi. I A). The orthostats of the cist are arranged in such a manner that each orthostat projects laterally at one end from the other, forming clockwise or contra-clockwise *svastika* on plan and thus preventing internal collapse of the orthostats. The passage leading to a port-hole in the southern orthostat is flanked by two slabs and closed in front by another, fixed vertically in the ground. Externally, the cist and the passage are surrounded by cairn packing made up of earth and slab pieces. In turn, the cairn packing is encircled by a low wall of multiple-coursed dressed or semi-dressed slab pieces. Finally, the whole structure is surrounded by river-borne packing of pebble, thereby appearing like a hemispherical low mound. Occasionally, megaliths of this type have low platforms built of slab pieces, externally abutting the circle on different directions. Invariably the capstones are missing. Sub-type A is represented by simple cist with passage but the cist and passage of the Sub-type B are transepted. Among the excavated megaliths, Type I A is represented by Megaliths A I, A III and B XVII and Type I B by Megalith A II. -

Megalith A I.—The orthostats arranged in contra-clockwise *svastika* in plan form a cist measuring 1.9 x 1.8 m internally and longer axis being oriented north-south. The cist is paved with a floor-slab at a maximum depth of 1 .55 m. A port-hole (60 cm diameter) is provided in the eastern half of the southern orthostat at a height of 75 cm from the floor. The passage, paved

with floor slabs, measures 145 m in length internally. The width is 1.45 m at the northern end and 9 cm at the southern. . ,

This megalith was found very much disturbed and did not yield any noteworthy antiquity or pottery. However, a 15 cm long human fibula, a pre-molar tooth, a few bone pieces and a shell bangle were encountered in the filling of the cist. Some disintegrated pieces of human bone were recovered from a pot buried under the south-western platform. The pottery, though meagre and recovered only from the filling of the cist and below the south-western platform, is represented by red ware. It is wheel turned and vary in fabric from medium to coarse showing grit and mica particles used as *digrassaints.* A thin coat of red slip, which peals off easily, is applied on the exterior. Vases of medium size and a bowl were found in the cist, while a large jar or vase was found below the platform.

Megalith A II.—The cist formed by orthostats in clockwise *svastika* pattern measured internally 2.50 m NS X 2.90 m EW. Two laterally arranged septa divided the cist into three chambers A, B and C (pl. II A) internally measuring 2.50 m x 6 cm, 2.50 m x 1.30 m and 2.50 m x 80 cm respectively. The port-holes cut longitudinally into the southern end of each section, one with 1.70 m diameter and the other with 70 cm diameter, were functional and provided access from one chamber to the other. On the southern orthostat of the cist was a port-hole measuring 66 cm in diameter opening into the central chamber. Only B and C chambers had closely-fitted floor slabs at a depth of 1.76 m and 1.86 m respectively. The passage attached to the cist measuring 2.50 m x 1.40 m internally was compartmented by a septum running north-south. The floor of the passage was paved with stone slabs.

Megalith A III.—Built of four orthostats in a clockwise *svastika* plan, this cist, oriented north-south, measured 1 .7 m x 1 .4 m internally. The cist provided with floor-slab at a maximum depth of 92 cm, had a port-hole (51 cm diameter) in southern orthostat. Its passage, the floor of which was not paved, leading to the port-hole measured 95 cm in length and 68 cm in width. The cist and passage were surrounded by slab-circle of 6.1 m diameter, which in turn was encircled by pebble packing of 50 cm thickness. The pottery from the cist was found kept on the floor-slab and include more than twenty small vases. The shapes represented are globular vessels, small to medium-sized lid-cum-bowls and small bowls in Black-and-red Ware, dull red and red slipped wares. Human and animal bone fragments were found in these vases. Besides, some pieces of handmade pottery, probably belonging to a sarcophagus, were also noticed. The passage yielded only one bowl in black ware.

Megalith B XVII.—This burial is structurally similar to the aboye one. Its cist measured 1.70 m x 1.12 m, while the unpaved passage was 1.5 m in length and 94 cm in width at northern end and 47 cm at the southern. No traces of port-hole could be seen, as the orthostats are broken. Fragments of human hip bone and a rib fragment, along with two potsherds, were kept just 20 cm below the surface in the passage, on a slab lying above the packing of brown soil mixed with pebbles. However, the cist yielded two human skulls (pl. I B), skeletal remains of a small carnivorous animal, a small hollow-based iron arrowhead and a few potsherds in the filling, made up of pebble and compact brown soil. Further, two more skulls without mandibles and some long bones were found on the floor-slab at a depth of 81 cm. The placement of skulls, long bones and mandibles at different levels in the cist seems to be deliberate. The pottery, found in the cist and passage, is represented by dull red and red wares, the types included being large and miniature vases.

Megalith A //.—This burial representing Type **I B** had a cist built of four orthostats arranged in clockwise *svastika* pattern. The cist measuring 2.5 (north-south) x2.9 m (east-west) internally was transepted into three cells on the longer axis by two vertically placed slabs. The western, central and eastern cells, measured 60,130 and 90 cm respectively in width and 2.5 m in length. Interestingly both the transepting slabs had semi-oval port-holes cut vertically at the southern end. The western port-hole measured 1.7 m at the longer axis and the eastern 70 cm.

The southern orthostat of the main chamber also had a port-hole (66 cm diameter) connecting central chamber and the passage; the latter (2.5 x 1.4 m) internally running north-south was likewise transepted by a slab into eastern and western halves. The central and eastern cells were found at a depth of 1.76 and 1.86 m respectively whereas the passage here had stone paved flooring. Encircled by a low wall of extant seven courses of slab pieces, the cist with the passage had the internal diameter of 10 m. It is worth-noting that the low wall was surrounded by a 2.-m thick river-borne pebble packing. As this megalith was found plundered earlier, only fragments of human and animal bones, terracotta horn of an animal figurine, a shell bangle piece, a small round rattle of copper decorated on one side with human face, a copper bangle piece, iron objects such as arrowhead and nail-parer and potsherds were recovered from the filling of the cist and passage. Pottery is represented by Black-and-red Ware, red and black wares, the types included being vases of various sizes, bowl and lids, A jar covered with an inverted pot of red ware decorated externally with herring-bone design was found below the south-western platform and contained only a few slab pieces.

TYPE II is represented by pit-circle, circular or elliptical on plan with tapering sides containing the grave goods at the bottom and/or in the filling of earth, pieces of stone slab and pebbles, all surrounded by either roughly-hewn big granite boulders (sub-type A) or semi-dressed multiple-coursed limestone slab-circle followed by an outer ring of upright slabs with pebble packing in between (sub-type B). Among the excavated burials, Megalith C-I represented Type II A, and Megalith **B I** of Type **II B.**

Megalith C I.—Internal diameter of this megalith surrounded by roughly-hewn big granite boulders was 5.5 m, while the external diameter including the outer pebble packing was 6.8 m (pl. **III** A). The pit was found dug up to the High Level Gravel encountered at a depth of 2.7 m. A thin layer of ash was noticed spread over the flooring of the pit. Four pots including three bowls and one solid conical lid, all in black ware with a fine slip, were kept in a shallow pit scooped out in the floor on the northern side. The excarnated skeletal remains belonging to two persons were kept over the ash-bed roughly in an articulated position in north-south orientation (pl**. III B**), heads resting on the four pots. All the pots kept as burial furniture were found on the eastern side except one which was on the west. It is interesting to note that not a single metal object was found either in association with the skeletal remains or in the filling material. After covering the grave goods with greyish alluvial loose soil to a height of nearly one metre from the bottom, an articulated skeleton of a ram or goat was placed in south-north orientation, with its head towards the south, on ash-bed in the south-eastern corner. The pit was again filled with same greyish alluvial earth to a height of 33 cm over which was found a human skeleton, oriented north-south, without its upper and lower extremeties and may belong a teenager (girl ?). The greyish alluvial soil was further filled up to the lower edge of the circle stones, which was finally packed with limestone slab pieces and earth. In the later times the megalith was opened at the centre by removing the filling to a depth of 1-7 m in order to fill it with black compact soil with a few river-borne pebbles, and this might have been connected with some ritual. The presence of two skeletons, one of human and the other of an animal, in the filling in two different levels and away from the centre is noteworthy.

Altogether eighteen pots, including the above mentioned four, in Black-and-red Ware, red and black wares, were encountered. The types include: four vases with carinated profile and convex base; one lid-cum-bowl of medium fabric, treated externally and internally with a thick lustrous red slip in red ware; bowls, vases and solid conical lid, of medium to fine fabric, treated with slip on the exterior excepting two deep bowls which were treated internally also and having luted base and bands in low relief inside, in black ware; and three bowls and one

dish or basin, of medium to fine fabric, treated with a slip both externally and internally in Black-and-red Ware.

Megalith B I.—This megalith situated on a low natural mound, had an oval pit, oriented north-south, dug up to the disintegrated bed-rock. A ramp built of stone slabs was provided on the northern edge of the pit. A 50 cm wide superficial passage lined with slab pieces, was found over the ramp, running in between the centre of the pit and the enclosing circle. The mode of filling of the pit is interesting: in the first stage the pit was filled with brownish loose soil; then this filling was cut in the form of a 'U' to be lined with overlapping pieces of stone slabs and filled with black sticky clay; and this was again cut in the form of a 'V and lined with overlapping slab pieces and filled with river-borne pebbles and brown sandy soil. The overall appearance of these fillings resemble that of a blossoming flower in section (pl**. IV A)** as well as on plan (pl. **IV B).** The filling of pebbles was provided up to the circle of semi-dressed slabs as also, in the passage. All this filling was surrounded by a multi-coursed low wall of semi-dressed slab pieces, which in turn encircled by upright slabs, the gap between the two being packed by pebbles. Except some medium-sized limestone slabs kept at intervals and seven pots, nothing in the form of antiquities or skeletal remains were encountered either at the bottom or in the filling of the pit. Of the seven pots, two each of carinated vases, lids and bowls were in red ware, while one miniature bowl was in black ware. All the vases in both the wares have fine slip and are of medium fabric.

TYPE **III** is represented by cist-circle, the cist being oblong and oriented north-south. The western and eastern orthostats project laterally from the northern and southern ones. Though the cist is provided with a floor-slab, no port-hole was found in any of the examples. The rubble and earth packing, surrounding the cist, is bound by multi-coursed semi-dressed slab-circle, the outside of which is packed by pebbles. In the absence of any evidence it could not be said that the cist had capstone. Among the excavated megaliths, Megaliths **B VII** and **B VIII** represent this type.

Megalith B VII.—Internally the cist measured 1 .85 m (north-south) x 0.65 cm (east-west) x 0.25 cm (above the floor-slab). The diameter of the surrounding stone slab-circle was 4.15 m (pl. **II B**). Neither pottery, nor antiquities or skeletal remains were encountered in this megalith.

Megalith B VIII.—Same as above one but measured 1.95 m x 74 cm x 25 cm. The surrounding slab-circle was roughly oblong measuring 3.2 m. on longer axis and 2.7 m on shorter. The diameter of the megalith, including the outermost pebble packing, was 4.2 m. This megalith, too, did not yield any thing.

6. EXCAVATION AT SIDDARAJALINGAPURAM, DISTRICT KURNOOL.—A small-scale excavation carried out by the Department of Archaeology and Museums, Government of Andhra Pradesh, exposed the remains of an early historical period. The excavation revealed walls built of shale slab pieces, a kiln and hearth, besides black-and-red, fine and coarse red wares. However, a few Middle Palaeolithic tools were also collected from the fields around.

7. EXPLORATION IN DISTRICT MAHBUBNAGAR.—-Shri N. C. Ghosh of the Excavations Branch (I) of the Survey, Nagpur, assisted by Sarvashri H. P. Sinha and K. Ismail, during the course of exploration around Malleswaram on the left bank of the river Krishna, noticed two groups of megalithic cairn-circles having unhewn boulders as circle stones. Of them, one group having three burials was found on a .small ridge, about 300 m away from the village and the other group with eight cairn-circle-; was noticed in a field, one kilometre west of the village.

Shri R. V. Siva Sarma of the South-Eastern Circle of the Survey, in the course of his exploration, discovered the following sites of archaeological interest.

District	Taluk	Village/site	Cultural assemblage
Mahbubnagar	Alampur	A. Burdipad	Early historical pottery and medieval fort) temple, sculpture and inscriptions
-do-	-do-	Chinnipad	Late medieval and inscriptions
-do-	-do-	Kalgotla	Medieval temple aad sculptures
-do-	-do-	Kalkuntla	Sculptures
-do-	-do-	Korvipad	Medieval temple and sculptures
-do-	-do-	Maddur	Medieval temple and sculptures
-do-	-do-	Poosalapad	Early historical
-do-	-do-	Pullur	Medieval temple and inscriptions
-do-	-do-	Rajoli	Early historical pottery, medieval fort, temple, inscriptions and sculptures
-do-	Kollapur	Amargiri	Medieval temple and inscriptions
-do-	-do-	Ambatpalle	Medieval temple
-do-	-do-	Ayyawaripalle	Megaliths and medieval temple
-do-	-do-	Bekkam	Medieval temple
-do-	-do-	Chellapahad	Megaliths and medieval sculptures
-do-	-do-	Chintalapalle	Medieval temple
-do-	-do-	Dagada	Medieval temple
-do-	-do-	Ettam	Medieval temple and inscriptions
-do-	-do-	Jonnal Bogada	Late medieval and inscriptions
-do-	-do-	Kalwakole	Medieval temple and sculptures
-do-	-do-	Kalwarla	Medieval temple
-do-	-do-	Koderu	Medieval temple
-do-	-do-	Koppunur	Medieval temple
-do-	-do-	Kothapet	Medieval pottery
-do-	-do-	Kudikila	Medieval temple
-do-	-do-	Lingasanipalle	Early historical
-do-	-do-	Manchupalle	Megaliths and medieval temple
-do-	-do-	Maredumandinne	Neolithic
-do-	-do-	Nagulpalle	Medieval temple and inscriptions
-do-	-do-	Pangal	Medieval temple and sculptures
-do-	-do-	Pasupala	Medieval temple and inscriptions
-do-	-do-	Peddakarpamula	Medieval temple
-do-	-do-	Peddakothapalle	Medieval temple
-do-	-do-	Pentlavelli	Medieval temple
-do-	-do-	Pulgascherla	Medieval temple
-do-	-do-	Sampatraspalle	Medieval temple
-do-	-do-	Singawatnam	Medieval fort and temple
-do-	-do-	Solipuram	Early historical
-do-	-do-	Teegalapalle	Medieval temple
-do-	-do-	Tirmalapuram	Medieval temple
-do-	-do-	Toomkunta	Medieval temple
-do-	-do-	Vallabhapuram	Medieval site and inscriptions
-do-	Kollapur	Vemkal	Medieval site with sculptures
-do-	Wanaparthi	Buddharam	Medieval temple and sculptures
-do-	-do-	Ghanpur	Medieval temple and inscriptions

District	*Taluk*	*Village/site*	*Cultural assemblage*
Mahbubnagar	-do-	Gumpanapalle	Medieval fort
-do-	-do-	Kanaipalle	Medieval temple
-do-	-do-	Kondur	Megaliths, early historical) medieval temple and inscriptions
-do-	-do-	Konnur	Medieval temple
-do-	-do-	Kothakota	Medieval site and inscriptions
-do-	-do-	Pamapur	Medieval temple
-do-	-do-	Patha Jangamaipalle	Medieval temple
-do-	-do-	Ponnakal	Medieval temple and inscription
-do-	-do-	Srirangapur	Medieval temple, fort and inscriptions
-do-	-do-	Teletipadu	Early historical
-do-	-do-	Virladinne	Medieval temple

8. EXCAVATION AT BUDIDAPADU, DISTRICT MAHBUBNAGAR.—The Department of Archaeology and Museums, Government of Andhra Pradesh, carried out a small-scale excavation which revealed three-fold sequence. Period I is characterized by the occurrence of Black-and-red Ware, Period II by the materials of the early medieval times and Period III belonging to the late medieval times. The megalithic burials noticed in the vicinity also belong to Period I.

9. EXCAVATION AT CHINNAMARUR, DISTRICT MAHBUBNAGAR.—The Department of Archaeology and Museums, Government of Andhra Pradesh, conducted excavation at Chinnamarur, a chalcolithic site extending to an area of 200 x 100 m on the left bank of the river Krishna. Excavation revealed a cultural deposit of 90 cm yielding black-on-red, burnished grey, black and red wares, besides polished stone celts, parallel-sided blades, steatite beads, copper rings, fish-hooks, querns, pestles and stag horns. Circular house plans appended by slab pieces were also encountered. An interesting feature of the culture is that the burials were inside the habitation as well as outside in a cemetery. One skeleton (1.8 m) lying in north-south orientation was found placed over the bed-rock in a 20 cm deep pit in the cemetery. Although the burial was primary in nature the phalanges were found placed over the body having its skull crushed. A vase of burnished grey ware was placed on the western side of the skeleton as burial furniture. Another burial exposed in the habitation was secondary in nature and was oriented north-east by south-west. A 5-cm long copper arrowhead and a shallow bowl in Black-and-red ware were placed on the north-western side of the skeletal remains and near the skull was placed two vases in coarse grey ware. Besides, a saddle quern, pestle and a polished stone-axe came from the burial.

Another interesting feature of the site is that the habitation area and the cemetery of the chalcolithic people were subsequently used for similar purposes even by the succeeding megalithic people, thus indicating a time-gap between the two cultures. Among the five oblong burials exposed this season, Gist 5, having a skeleton of 1-8 m in length with an iron knife (23 cm) pierced into the neck, and Gist 6, which is transepted into three chambers, having port-hole and passage, are noteworthy. The burials yielded iron objects, apart from vases in Black-and-red and red wares.

10. EXCAVATION AT KARAPAKALA, DISTRICT MAHBUBNAGAR.—The Department of Archaeology arid Museums, Government of Andhra Pradesh, conducted a small-scale excavation at Karapakala. The excavation revealed two periods of occupation, the earlier one yielding handmade: coarse grey and red wares and the later crude black-and-red and coarse red wares

and grey ware of the preceding period. A number of megalithic burials were also noticed near the site. Of them, one representing pit-circle with cairn packing was excavated. An interesting find, besides skeletal remains, was a copper bell with bone tongue.

11. EXCAVATION AT RANGAPURAM, DISTRICT MAHBUBNAGAR.—An exploratory dig was conducted by the Department of Archaeology and Museums, Government of Andhra Pradesh, and exposed remains of a brick-built temple with a square (4.10 m) *garbha-griha* having a flight of steps and an enclosure wall. This temple probably belonged to the early Chalukyan times {*circa* eight century A.D.) as the brick measures 32 x 20 x 8 cm.

12. EXPLORATION IN DISTRICT PRAKASAM.—Shri P. Sitaramamurthy of the South-Eastern Circle of the Survey, in the course of his exploration, discovered the following sites of archaeological interest.

District	*Taluk*	*Villagejsite*	*Cultural assemblage*
Prakasam	Darsi	Ananthavaram	Medieval
-do-	-do-	Aravallipadu	Medieval temple
-do-	-do-	Bellamkonda-Varipalem	Early historical
-do-	-do-	Bheemavaram	Medieval temple .
-do-	-do-	Boddikurapadu	Early historical and medieval temple
-do-	-do-	Chinavullagallu	Early historical and a late medieval temple
-do-	-do-	Darsi	Neolithic, early historical and a medieval temple
,do-	-do-	Dondapadu	MedievaJ temple
-do-	-do-	Ganga Devipalle	Early historical and a medieval temple
-do-	-do-	Ganga Donakonda	Early historical a medieval temple and inscriptions
-do-	-do-	Gangavaram	Late medieval temple
-do-	-do-	Gudipadu	Early historical and a medieval temple
-do-	-do-	Jammalamadka	Early historical and a medieval temple
-do-	-do-	Kambhampadu	Early historical
-do-	-do-	Kellampalle	Late medieval temple
-do-	-do-	Korlamadugu	Medieval temple and inscriptions
-do-	-do-	Kothapalla	Early historical
-do-	-do-	Lakkavararn	Late medieval temple
-do-	-do-	Maddipadu	Medieval temple
-do-	-do-	Manginipudi	Early historical, a medieval temple and sculpture;
-do-	-do-	Mannepalle	Early historical and inscriptions
-do-	-do-	Marella	Early historical and a medieval temple
-do-	-do-	Mundlamuru	Early historical, a medieval temple and inscriptions
-do-	-do-	Muzellapalle	Early historical
-do-	-do-	Pedaravipadu	Early historical and a medieval temple
-do-	-do-	Peddauyyalawad a	Late medieval temple
-do-	-do-	Polavaram	Early historical, sculptures and inscriptions
-do-	-do-	Pothakamuru	Neolithic and early historical

District	*Tal.uk*	*Villagejsite*	*Cultural assemblage*
Prakasam	Darsi	Potlapadu	Medieval temple
-do-	-do-	Purimitle	Late medieval temple
-do-	-do-	Sarnanthapudi	Medieval temple
-d4-	-do-	Sangapuram	Medieval temple
-do-	-do-	Singanapalem	Neolithic and early historical
-do-	-do-	Talluru	Early historical
-do-	-do-	Tellapadu	Medieval temple
-do-	-do-	Umamaheswarapuram	Late medieval temple
-do-	-do-	Vempadu	Early historical, a medieval temple and sculptures
-do-	-do-	Venkatapuram	Medieval temple
-do-	Ongole	Aloor	Early historical, a medieval temple and inscriptions
-do-	-do-	Allurukottapatnam	Medieval site and inscriptions
-do-	-do-	Chejerla	Late medieval temple
-do-	-do-	Ithamukkala	Early historical and a late medieval temple
-do-	-do-	Karavadi	Early historical, a medieval temple and inscriptions
-do-	-do-	Koppolu	Late medieval
-do-	-do-	Madanuru	Early historical and a late medieval temple
-do-	-do-	Padarthi	Early historical and a medieval temple
-do-	-do-	Patapadu	Late medieval
-do-	-do-	Ulchi	Medieval site and inscriptions
-do-	-do-	Ganugapenta	Late medieval temple
-do-	Podili	Goguladinne	Megaliths
-do-	-do-	Gorugonthalapadu	Medieval temple
-do-	-do	Mangalakunta	Late medieval temple
-do-	-do-	Nagendlamudupu	Late medieval temple
-do-	-do-	Nayudupalle	Prehistoric engravings, neolithic, early historical and medieval
-do-	-do-	Pothalapadu	Medieval temple
-do-	-do-	Seethanagulavaram	Megaliths
-do-	-do-	Tadivaripalle	Late medieval temple
-do-	-do-	Tarlupadu	Medieval temple
-do-	-do-	Tellabadu	Medieval temple

Dr K. Krishnamurthy of the above Circle of the Survey, assisted by Sarvashri D. Hanumantha Rao and P. Sitaramamurthy, during the course of exploration, discovered vestiges of a brick-built structure at Vellalacheruvu in Addanki Taluk. At Bommalabodu, in Darsi Taluk, a dilapidated brick structure, probably a shrine of the times of the Early Chalukyas, three inscriptions, two of them in Telugu-Kannada characters, along with a few loose sculptures representing Mahisasuramardini, Kodandarama, Karttikeya etc., were noticed on the slopes of a hillock called Bommalabodu. In the vicinity, another Early Chalukyan brick-built shrine having a Durga sculpture and on the southern foot of the hillock an extensive habitational area

with traces of rubble walls and strewn with pottery represented by red and grey', wares, were noticed. A Buddhist site was discovered near Mylavaram in the above-mentioned Taluk. Another habitation site, not far away from the above one yielding cultural remains belonging right from the neolithic to the early historical times, was noticed. A few pieces of Rouletted Ware were also collected. At Medarametla, in Ongole Taluk, was discovered an extensive but badly distrubed early historical habitation site. One of the interesting features is the presence of Rouletted Ware in black and orange shades.

The South-Eastern Circle of the Survey, has brought to light the sites yielding neolithic and early historical pottery at Addanki, Balliparu, Chodavaram, Pangalur, Polavaram, and sculptures datable to *circa* tenth-eleventh century A.D. at Aunavaram, Budanda, Govada, Kolalpudi, Nauchorapuram, Nayudipallam and Rajanpalle.

13. EXPLORATION IN DISTRICT SRIKAKULAM.—Shri D. Hanumantha Rao of the South-Eastern Circle of the Survey, in the course of his exploration, discovered vestiges of brick structures on the top of a small hillock locally known as Itikalamitta (brick-mound) located near Jadayada in Tekkali Taluk. The plain surface of the hillock is strewn with brick bats, pottery and dressed sandstone blocks.

14. EXCAVATION AT CALINGAPATNAM, DISTRICT SRIKAKULAM.—In continuation of last year's *(1978-79,* p. 66) work, the South-Eastern Circle of the Survey, under the direction of Dr K. Krishnamurthy, assisted by Sarvashri Vasker Sen, P. N. Kamble, D. Hanumantha Rao and G. V. Srinivasa Rao, resumed excavation at the Stupa-mound.

Excavation revealed *ayaka*-platforms on the northern, eastern and western sides of the stupa, the southern one being disturbed due to brick-robbing. All the three *ayaka*-platforms are of uniform length (4 m), each facing a cardinal direction. A circumambulatory path of 3.45 m width, paved with bricks and plastered with lime concrete, was provided all around with an entrance on the west. This square entrance showed post-holes on either side suggesting a wooden frame or doorway to the entrance. The main stupa, 26.5 m in diameter, was built on wheel pattern in which three concentric circles are interconnected by radiating spokes. Excavation near another smaller stupa in the vicinity also revealed an entrance similar to the above.

ASSAM

15. EXPLORATION IN DISTRICT DARRANG.—The Department of Archaeology and Museums, Government of Assam, during the course of exploration brought to light at Deulpur a rectangular (60 x 40 m) tank with ruins of brick structures on the northern bank and an octagonal *garbha-griha* of a brick temple enshrining a *Siva,4inga,* probably belonging to the Koch kings of Assam of late medieval times. At Damarapota, a modern temple was noticed built over the ruins of an ancient stone temple besides a square (60 x 60 m) tank. The *garbha-griha* of the modern temple houses a few sculptures and architectural members belonging to the ancient temple. Important among them being an image of Vishnu and a lintel with three decorative *sakhas* and a full-blown lotus as *lalata-bimba,* assignable to *circa* tenth century A.D. Vishnu is in *samapada-sthanaka* posture flanked on either side by Sarasvati and Lakshmi. The stela of the image is decorated with two flying *Vidyadharas,* attendants, Sarasvati and Lakshmi. The pedestal has a few lotuses, attendants and a Garuda. Bhange-Baruwar is strewn with ruined structures built either of bricks or stone. The brick structure, though irregular, is of a temple, probably belonging to the Koch kings (sixteenth-seventeenth century A.D.). However, the ruins of a stone structure belong to a small but ornate temple datable to tenth century A.D. Door-sills, monolithic *pranala,* pedestal for images, lintel, door-jambs, *kalasa* and images like four-armed Karttikeya, sitting Ganesa, *Siva.-linga* with *yoni-pitha,* etc. are found in the ruins.

At Barnagari, an ancient tank (40 m sq) and ruins of a stone temple, such as pedestals of images, *pranala,* door-sill, three door-jambs with plain *sakhas,* stylistically datable to early medieval times, were noticed. A brick-built temple, believed to have been constructed by the Koch king Naranarayana (A.D. 1540-85), shows horizontal bands in prominent relief with wavy patterns flanking the bands on the entire height of the walls *(pabhaga* not distinguishable from *jangha* and devoid of *deva-kosthas)* was noticed at Mura-Dewar. On plan the temple has a *pancharatha* outline with a small *mukha-mandapa.* Near by were seen scattered a few architectural members of a stone temple. An earthern rampart, 15 m in width at the base and 3 m in height, traditionally assignable to a legendary king Saheraja, appearing to be enclosing an area of 1.5 x 1 km, was discovered at a distance of 7 km west of Udalguri. Two temples in ruins, one built of stone and the other of bricks (size:23 x 15 x 4 cm), 0.5 km from each other, were noticed at Jorpukhuri near Hatigarh. On the basis of architectural style the former can be dated to *circa* eleventh-twelfth century A.D. and the latter to late medieval times. At Sirajuli, 5 km east of Singri, ruins of a stone temple were noticed. Most of the decorated architectural members have been stored in the premises of a modern *namghar* (prayer-hall). They include a pair of door-jambs with three *sakhas,* a ceiling slab carved with concentric circles, a *sirapatti* with decorative bands and a full-blown lotus in the *lalata-bimba,* a door-sill carved with *kirttimukha,* sixteen-sided columns, a four-armed Trivikrama Vishnu accompanied by *Vidyadhara, gajavyala* and *Garuda.* The temple may be dated to *circa* tenth-eleventh century A.D. At Dhirai, on the eastern boundary of Singri Tea Garden, were found a number of mounds, some of them in rows, enclosed within an earthern rampart. Most of the mounds have been pilfered, and they have yielded structural ruins in stone as well as bricks. The architectural members include several lintels, jambs, pedestals of images and components of *bada* of a temple. The lintels and jambs are beautifully carved and are similar to theories from Majgaon near Tezpur and thus can be dated to eighth-ninth century A.D. Bangalibasti, 0.5 km west of Visvakarma ruins, yielded ruins both of stone and bricks. The stone ruins consist of several sculptures from the *jangha* and *bada* of a temple and a few *vyala* figures. The ruins appear to be later than Visvakarma-*mandir* and may be dated to eleventh-twelfth century A.D. At another site, known as Bhanga-*mandir,* 10 km west of Bangalibasti, where a new temple is being constructed, were noticed remains of a stone temple which could be dated to the twelfth-thirteenth century A.D.

BIHAR

16. EXPLORATION IN DISTRICT BHAGALPUR.—During the course of exploration, Shri A. N. Roy of the Mid-Eastern Circle of the Survey, discovered an extensive mound at Pirdauri on the bank of the river Ganga, yielding Northern Black Polished Ware, grey and red wares, besides terracotta bangle pieces.

17. EXCAVATION AT ANTICHAK, DISTRICT BHAGALPUR.—In continuation of the previous year's *{1978-79,* pp. 41-43) work, the Vikramshila Excavation Project of the Survey, under the supervision of Dr B. S. Verma assisted by Sarvashri B. N. Prasad, S. G. Saran, S. K. Chaudhary, Vijay Shankar, A. Mukherjee, M. P. Singh and T. K. Shrivastava, resumed excavation with the main objective of exposing the remaining portion of the votive stupa-complex unearthed earlier in front of the main gate of the Mahavihara. Besides, the mound at Malkapur to wards south-east of the main monastery and another mound at Jangalisthan, known as Dharohara in Madhorampur limits, 0.5 km north-west of the main monastery, were probed for ascertaining their potentiality.

Excavation (pl. V A) in front of the main gate revealed altogether one hundred and three votive stupas, most of them being constructed in reused bricks. Moreover, the existence of twenty more stupas could be traced on plan; yet the complex has not been exposed fully.

Of the exposed stupas, only nine are built of stone, One of the damaged stone stupa was found decorated with miniature figures of Buddha in *bhumisparsa-mudra* (pl. VI A). The collapsed members of a votive stupa were assembled (pl. VI B). Some of the brick-built stupas were found plastered with lime. In the southern corner of the complex, a larger brick-built stupa, 2.8 m in height with forty-eight courses of bricks, was encountered. The central chamber, measuring 2.9 m sq and 2.1 m in depth, had its floor paved with four courses of bricks, The chamber was found filled with earth and unbaked clay tablets, Probably the tablets had miniature figures of Buddha in *bhumisparsa-mudra* coated with ochre. But they are in bad state of preservation and have become clay-lumps. The stupa, resting over a sand deposit, showed three phases .of repairing activity, the last being probably in the thirteenth century A.D. The excavation in the area yielded many decorated stucco pieces representing floral designs and *kirti-mukhas.* A few potsherds belonging to the Islamic times were found also on the floor of the stupa.

In the excavation on the mound near Jangalisthan, a rampart-wall with salients, built of bricks, probably robbed from the Mahavihara, was encountered. Some of the outer veneer stones of the rampart have architectural members like door-sill, lintel, jambs, pedestals, etc. The length of the wall so far exposed is about 21 m, the width being 4.5 m. The basement has six courses of irregular rectangular stone slabs, over which the wall of forty-seven courses of bricks, including four courses of offsets, rising to a height of 3.6 m was built. Further, the southeastern arm of the rampart, running from the south-eastern corner bastion towards the eastern arm, was exposed to-a length of 3 m (pl. V B). It has fifty-six courses of bricks. The south-eastern corner bastion is 10.5 m in diameter, the extant height being 5.8 m. Another bastion (7.5 m diameter), 14 m west of the south-eastern bastion, projecting from the southern wall, was also noticed. The rampart seems to have been built in the early fourteenth century A.D., just after the destruction of the monastery. The important finds recovered from this area include torsos of Buddha and Bhairava and a panel representing *navagrahas* (pl. VII A), with their respective *vahanas,* all in stone.

Excavation on the mound at Malkapur, from where a villager had encountered a large number of unbaked clay tablets representing miniature figures of Buddha in *bhumisparsa-mudra,* revealed disturbed votive stupas just below the humus.

In the area to the north of the main monastery, where a standing image of crowned Buddha was found last year, the wall was further removed resulting in the discovery of limestone slabs carved with the figures of Karttikeya (pl. VII B), Aparajita (pl. VII C) and Ganesa. Mention maybe made here of two bronze images (pl. VI C), one of Bodhisattva and the other of Tara, procured from the villagers.

18. EXCAVATION AT KARNACHAURA, DISTRICT MONGHYR.—Shri Ajit Kumar Prasad assisted by Sarvashri Kedar Nath Singh, Satyakam Prasad, L. P. Singh, N. C. Ghosh, J. Akhtar and U. S, Pandit of the Department of Archaeology and Museums, Government of Bihar, under the general supervision of Dr Sita Ram Roy, carried out excavation at Karnachaura. The excavation revealed three periods of continuous occupation from the Pala period to post-Muslim times.

Period I, belonging to the Pala period, is distinguished by the occurrence of red, black and grey wares, represented by such types as vases, basins, carinated *handis,* bowls with flat base as well as sagger base, knife-edged bowls, lids, dishes, troughs, storage jars, miniature pots, etc. A few sherds have impressed designs on them. The structural activity is represented by a rectangular (2.15 x 1.55 m) cell built of bricks, and it was found disturbed by later pits. Note-worthy finds include: terracotta animal figurines and beads; bangle pieces of glass; and stone discs and decorated pieces. A torso of Avalokitesvara and a broken head of Buddha may belong to this period despite the fact that these were recovered from the debris of the succeeding period.

Period II, belonging to medieval period, is represented by glazed ware showing typical floral designs, besides red and black wares with typical utilitarian types like bowls with ring-base, dishes, carinated *handis,* etc. Structural activity is confined to walls made of *lakhauri* and reused bricks.

Period III, belonging to late medival period, was characterized by wares of utilitarian shapes. The structures were built of bricks measuring 27 x 13 x 7 cm. Tile pieces were encountered in large quantity. The flooring of the structures were either made of rammed earth or lime and *surkhi.*

However, a few sherds of the Northern Black Polished Ware and associated black-slipped ware from the debris in the upper level suggest the existence of an earlier site nearby.

19. EXCAVATION AT KATRAGARH, DISTRICT MUZAFFARPUR.—In continuation of the last year's *(1978-79,* p. 67) work, Department of Archaeology and Museums, Government of Bihar, under the direction of Dr Sita Ram Roy assisted by Sarvashri Durga Nand Mishra 'Sudha', Krishna Kant Sharma, Narain Chandra Ghosh, Lakshman Prasad Singh, Raghunath Prasad Verma and Uma Shankar Pandit, resumed excavation at Katragarh. The excavation in the early levels revealed intensive structural activity in baked bricks (sizes: 36 x 24 x 4 and 33 x 24 x 9 cm). The walls of the structures had the width of a single brick. The floorings were made of rammed earth or paved with bricks. The pottery and other antiquities recovered from this season's excavation confirm the earlier results and made quantitative addition to the antiquities recovered earlier. However, mention may be made of a terracotta sealing, with the legend in Brahmi characters of the Kushana times, found in the post-Sunga level.

20. EXCAVATION AT NALANDA, DISTRICT NALANDA.—In continuation of the last year's *(1978-79,* p. 67) work, Shri R. S. Bisht, assisted by Dr B. Nath and Shri B. S. Jha of the Mid-Eastern Circle of the Survey, resumed excavation at Sarai mound with a view to expose the structures in full.

Excavation in the south-eastern corner of the mound partly revealed the outer boundary wall, with patches of plaster on the exterior of the temple-complex. Further extension of this wall with its western arm was traced in an area south of the mound. The wall (3*40 x .1 -68 x 0-47 m) showed three phases of structural activity. Besides, two brick-built votive stupas near the wall, a drain made of tiles towards the north of the complex, a few brick structures, probably residential rooms, built outside the wall on the eastern periphery of the mound, a huge earthern jar and a small vase *in situ,* were also exposed. Ceramic industry is represented by red ware with types like huge jars, *lotas* and vessels. Important antiquities recovered include terracotta sealings with the legend *Nalokasha* and balls and stone sculptures.

It may be presumed that the main shrine was a *panchayatana* type of temple as is evident from the discovery of two corner shrines, one on the east and the other on the north; other shrines are yet to be exposed.

21. EXCAVATION AT APHSAD, DISTRICT NAWADAH.—In continuation of the previous year's *(1978-79,* p. 67) work, Dr Prakash Charan Prasad and Shri Ajit Kumar Prasad assisted by Sarvashri J. Akhtar, L. P. Singh, R. P. Verma, U. S. Pandit and N. C. Ghosh, under the general supervision of Dr Sita Ram Roy, resumed excavation at Aphsad.

Excavation confirmed the earlier observation that the Vishnu temple of later Gupta period was built of different diminishing tiers which served as circumambulatory paths. The walls of these circumambulatory paths were adorned with niches and pilasters. The flooring of the paths were made of lime and *surkhi.* The ceramic industry was dominated by red ware represented by types like vases, bowls, *handis,* basins, lids, earthern lamps, etc. Noteworthy antiquities recovered include: beads of terracotta, stone and glass; bangles of glass and bronze; terracotta object, probably essence-stick stand; and iron objects like chisel and nail.

22. EXPLORATION IN DISTRICT RANCHI --- In the course of his exploration, Shri B. S. Jha of the Mid-Eastern Circle of the Survey, noticed an ancient mound at Bichna, yielding iron slags and implements, besides sherds of black-and-red and red wares.

GOA, DAMAN AND DIU

23. EXPLORATION OF COASTAL REGION IN GOA.—Sarvashri P. B. S. Sengar and S. S; Gupta, led by Shri A, K. Sharma under the guidance of Dr K. D. Banerjee of the Prehistory Branch of the Survey, explored a portion of the coastal region with the view to ascertaining the prehistoric potentiality and also to estimating the scope of future research work on prehistoric environment in the region. Mesolithic (Late Stone Age) sites were discovered on the high plateau extensively covered by laterite along the sea-shore in the vicinities of Anjuna, Cananguinim, Candolin, Chapora, Nuem and Rajibag, besides the earlier explored site Arali. The artefacts (fig. 1),

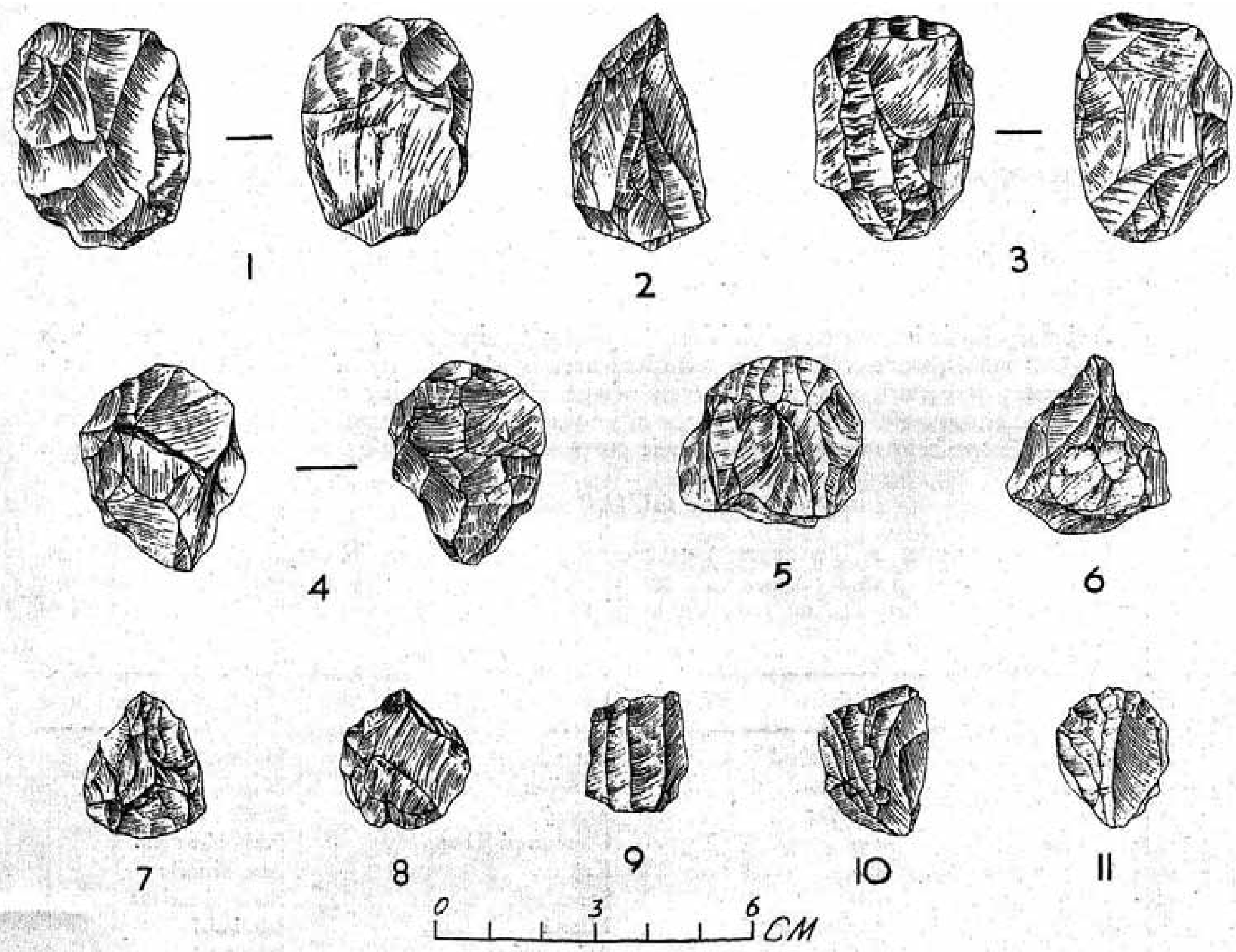


FIG. 1. *Arali* : *Late Stone Age tools*

mostly made on quartz and occasionally on chert, were found scattered on the surface . and sometimes embedded in the upper mantle of the soil. The tool-repertoire, non-geometric in nature and crudely manufactured, included scrapers, points, borers or awls, apart from cores and waste flakes. Blades are totally absent in these assemblages except at Arali where a few fluted cores and blades were found. Besides, a large number of fossilized and semi-fossilized molluscan-shells were also recovered in these assemblages which had no pottery.

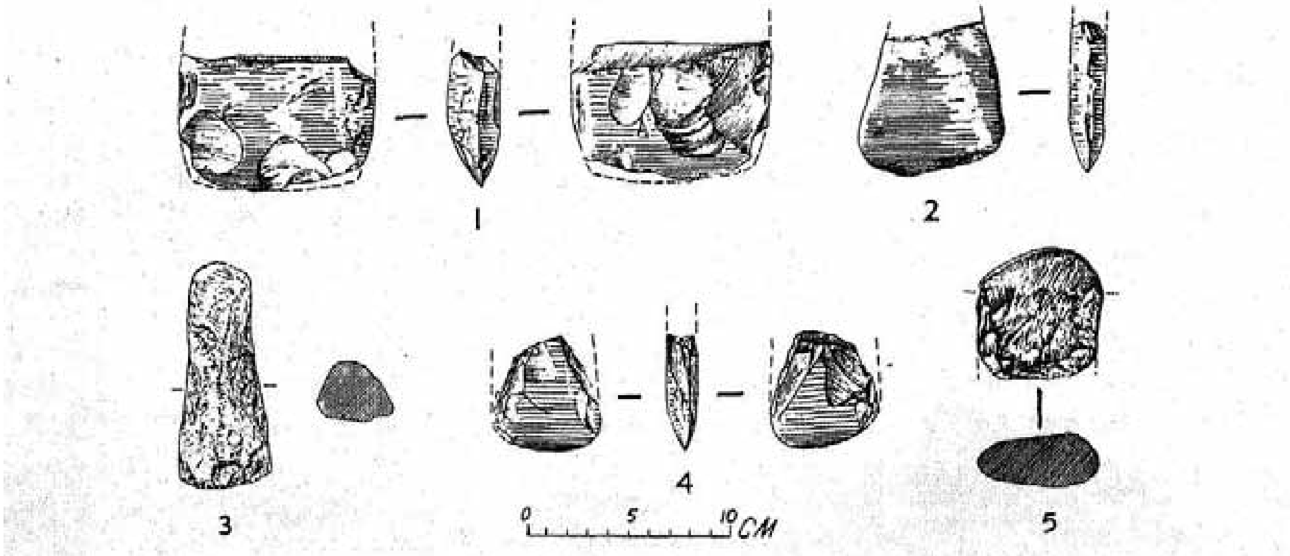


FIG. 2. *Arali : Neoleths*

A few neolithic implements (pl. VIII A and fig. 2), including polished stone celts, chisels and hammar stones, were collected in a limited area in the vicinity of Arali village. The site is on an elevated plateau towards north-west of the village showing crushed rocks and thrust valleys on the estuary of the river Sal. In the adjoining area, a large number of rectangular and a few circular stone-heaps were noticed. Their purpose and potentiality are yet to be ascertained.

GUJARAT

24. EXPLORATION IN DISTRICTS AHMADABAD, AMRELI, BANAS KANTHA, KHEDA, KUTCH, MAHESANA, RAJKOT, SABAR KANTHA AND VADODARA.—The Department of Archaeology, Government of Gujarat, during the course of exploration, discovered the following sites of archaeological interest.

District	*Taluk*	*Village/site*	*Cultural assemblage*
Ahmadabad	Ahmadabad	Ahmadabad	Medieval
-do-	Dahegam	Hathijan	Medieval
Amreli	Kodinar	Aranej	Medieval
-do-	-do-	Chuwan-ni-Khan	Early historical
-do-	-do-	Kaj	Protohistoric
-do-	-do-	Sarakhadi	Early historical
Banas Kantha	Radhanpur	Masali	Medieval
Kheda	Nadiad	Arjanpurkot	Medieval
-do-	-do-	Hathaj	Medieval

District	Taluk	Village/site	Cultural assemblage
Kutch	Nakhatrana	Aral-Nani	Early historical
-do-	-do-	Bhansara (near Bibber)	Medieval
-do-	-do-	Chhari-Moti	Medieval
-do-	-do-	Juna Patgadh (near Koteshwar)	Early historical
-do-	-do-	Kotada	Early historical
-do-	-do-	Mulu	Harappan
-do-	-do-	Nadapa	Medieval
-do-	-do-	Nangalpur	Mesolithic
-do-	-do-	Rasalia	Medieval
-do-	-do-	Sapara	Harappan
-do-	-do-	Ukharda	Mesolithic and medieval
-do-	-do-	Vehar	Medieval
Mahesana.	Kolol	Chhatral	Medieval
-do-	-do-	Dhanaj	Medieval
-do-	-do-	Saij	Medieval
Rajkot	Jasdan	Aatkot (on river Bhadar)	Lower Palaeolithic
Sabar Kantha	Bhiloda	Shamlaji (Meshvo Dam)	Lower Palaeolithic
-do-	Himatnagar	Jamla	Mesolithic and medieval
-do-	Meghraj	Meghraj	Medieval
Vadodara	Sankheda	Zand	Medieval
-do-	Vaghodiya	Vaghodiya (three sites)	Medieval

25. EXPLORATION IN DISTRICT AMRELI AND BHAVNAGAR.—Shri B. P. Bopardikar of the Prehistory Branch of the Survey, assisted by Sarvashri A. J. Nambhiraju, H. K. Manik and. K. S. Venkataramaiah, carried out preliminary exploration of the Shetrunji valley (fig. 3) in the eastern Saurashtra region of Gujarat, with the main objective of ascertaining whether there are any changes in the sea-level during the Quaternary period and, if any, their relationship with the Stone Age cultures, as noticed in the western coast of Saurashtra.

The major course of the river Shetrunji which originates in the Gir ranges at an altitude of 458 m MSL, flows through the Deccan trap rocks, passing through southern portions of Districts Amreli and Bhavnagar, joins ultimately the Gulf of Cambay near Talaja. The area covering the middle and lower courses of the river between Babapur and Talaja was explored and the following Stone Age sites were brought to light.

District	Taluk	Village] site no. in map	Cultural assemblage
Amreli	Amreli	Babapur (2)	Late Acheulian, Middle Palaeolithic and Mesolithic
-do-	-do-	Devalia (6)	Late Acheulian, Middle Palaeolithic and Mesolithic
-do-	-do-	Pitvajal (4)	Middle Palaeolithic and Mesolithic
-Jo-	-do-	Rajthali (5)	Middle Palaeolithic and Mesolithic
-d*o-	-do-	Travada (1)	Late Acheulian and Middle Palaeolithic

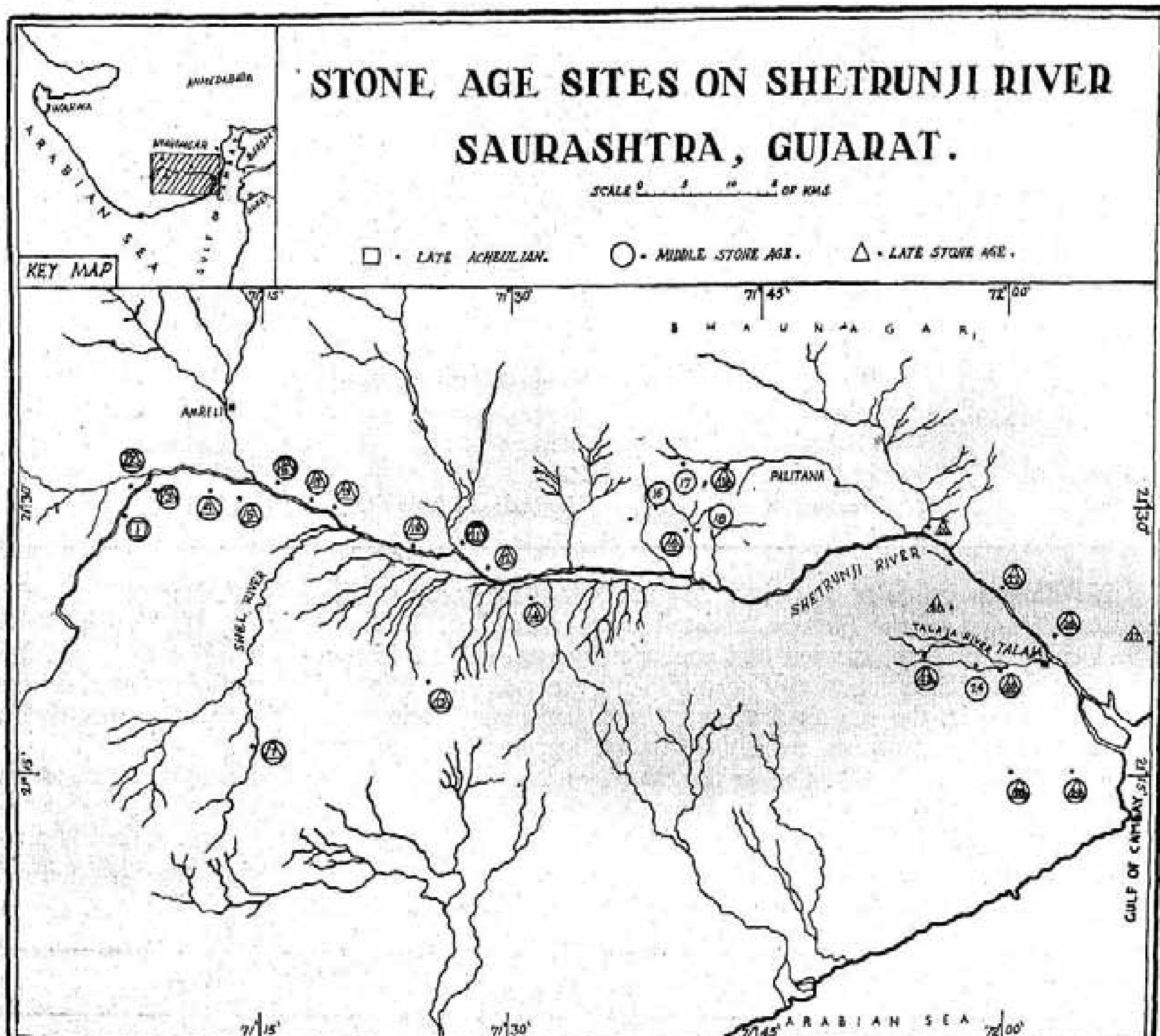

STONE AGE SITES ON SHETRUNJI RIVER
SAURASHTRA, GUJARAT.
LATE ACHEULIAN.
MIDDLE STONE AGE.
LATE STONE AGE.
KEY MAP
ARABIAN SEA
BHAUNAGAR
AMRELI
PALITANA
SHETRUNJI RIVER
SHEL RIVER
TALAJA RIVER
GULF OF CAMBAY
ARABIAN SEA

FIG. 3

District	*Taluk*	*Village/site no. in map*	*Cultural assemblage*
Amreli	Arnreli	Vankia (3)	Late Acheulian, Middle Palaeolithic and Mesolitbic
-do-	Khumbha	Rugnathparu (7)	Middle Palaeolithic and Mesolithic
-do-	Lilia	Amba (9)	Middle Palaeolithic and Mesolithic
-do-	-do-	Bovadi (12)	Middle Palaeolithic and Mesolithic
-do-	-do-	Kankot (8)	Middle Palaeolithic and Mesolithic
-do-	-do-	Krakach (11)	Late Acheulian, Middle Palaeolithic and Mesolithic
-do-	-do-	Shedravadar (10)	Middle Palaeolithic and Mesolithic
Bhavnagar	Datha	Talia (23)	Middle Palaeolithic and Mesolithic
-do-	Kundla	Mekada (14)	Middle Palaeolithic and Mesolithic
-do-	-do-	Pitavadi (13)	Middle Palaeolithic and Mesolithic
-do-	Palitana	Chamol (17)	Middle Palaeolithic
-do-	-do-	Chanda (19)	Middle Palaeolithic and Mesolithic
-do-	-do-	Damrala (18)	Middle Palaeolithic
-do-	-do-	Lakhavad (20)	Mesolithic
-do-	-do-	Rupavati (16)	Middle Palaeolithic
-do-	-do-	Sarangpur (15)	Middle Palaeolithic and Mesolithic
-do-	-do-	Tadach (21)	Mesolithic
-do-	-do-	Timana (22)	Mesolithic
-do-	Talaja	Bhungar (28)	Middle Palaeolithic and Mesolithic
-do-	-do-	Kamlol Nava (25)	Middle Palaeolithic and Mesolithic
-do-	-do-	Mathawara (27)	Mesolithic
-do-	-do-	Nichadi (29)	Middle Palaeolithic and Mesolithic
-do-	-do-	Sangana Nava (24)	Middle Palaeolithic
-do-	-do-	Velavadar (26)	Middle Palaeolithic and Mesolithic

The Quaternary sediments exposed in various sections of this river consist of partially-consolidated basal pebble-bed which is resting over weathered trap rock. The pebble-bed is overlain by a thick deposit of cross-bedded sandy gravel with small pebbles, intercalated with *kankar* ledges and silt bands, and in turn, it is overlain by yellowish to brown silt.

The lower gravel-bed yielded late to post-Acheulian artefacts. These tools (fig. 4) are smaller in size and are prepared on chert/jasper. The tool-types include a cleaver., small biface, ovate, bifacial choppers, scrapers on a large flake. An ovate and a flake with faceted platform are on trap (pl. VIII B).

The horizon of the sandy cross-bedded gravel yielded a few Middle Palaeolithic tools *in situ* (fig. 5), These are prepared on cherty material. The tool-types include varieties of scrapers on flakes, borers, awl-points, points, besides discoidal cores as also flakes.

The Mesolithic or microlithic tool industry (fig. 5) was generally encountered on the surface of brown or yellow silt. These tools are fashioned on chalcedony as well as on cherty material. Apart from cores and flakes, tools-types like flake-blade and scrapers were discovered.

Primary sites of the Middle Palaeolithic industries (fig. 6) were found at Sarangpur and Rupavati, where the tools were found embedded in ferrugineous gravel and clay section of secondary laterites exposed at a height of 106 m above MSL. The tools are exclusively made on red acidic trap rock and consist of large and small borers, scrapers, points, discoidal scrapers, cores, etc. The primary laterite was noticed along the eastern coast near Talaja and its

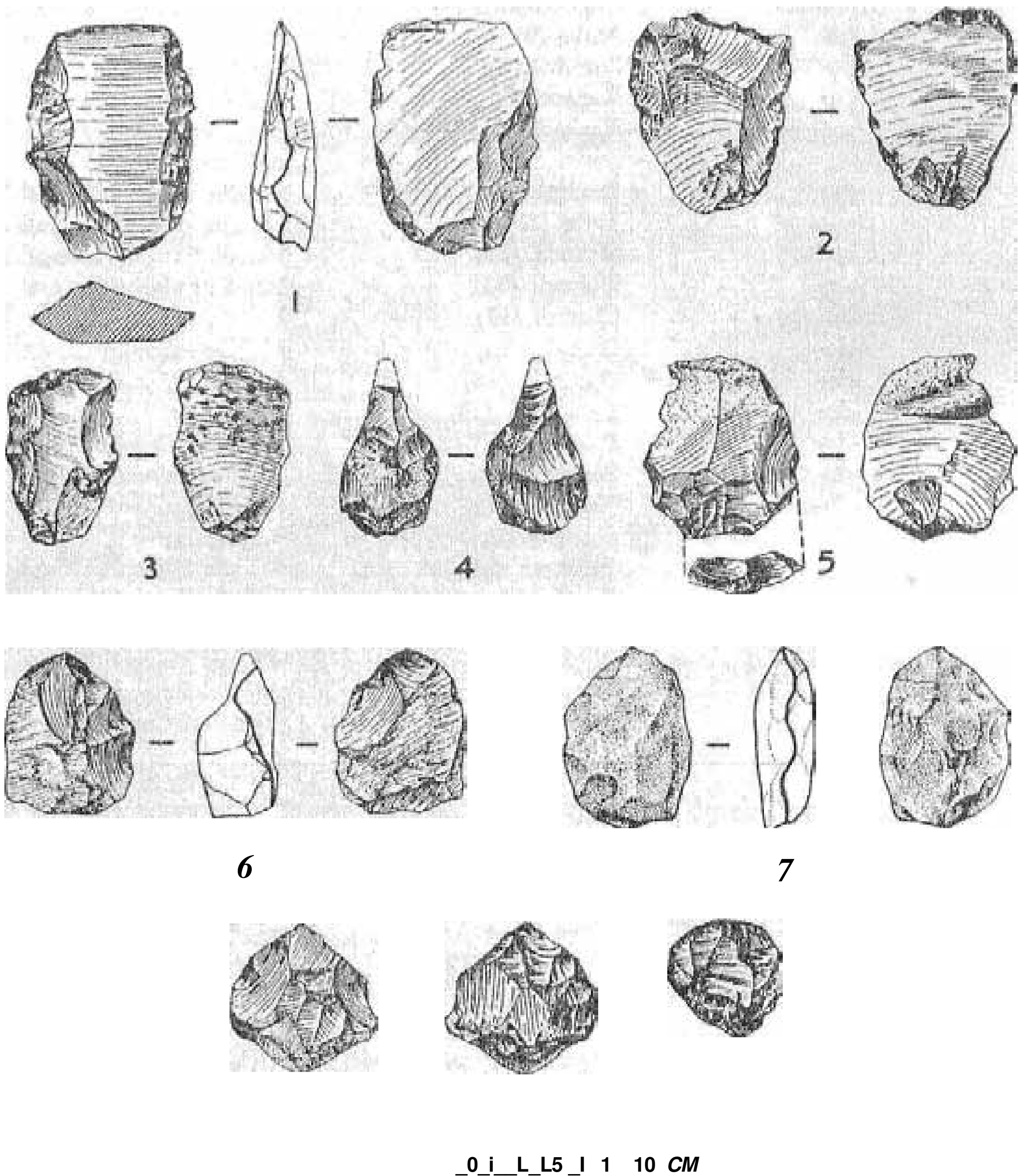
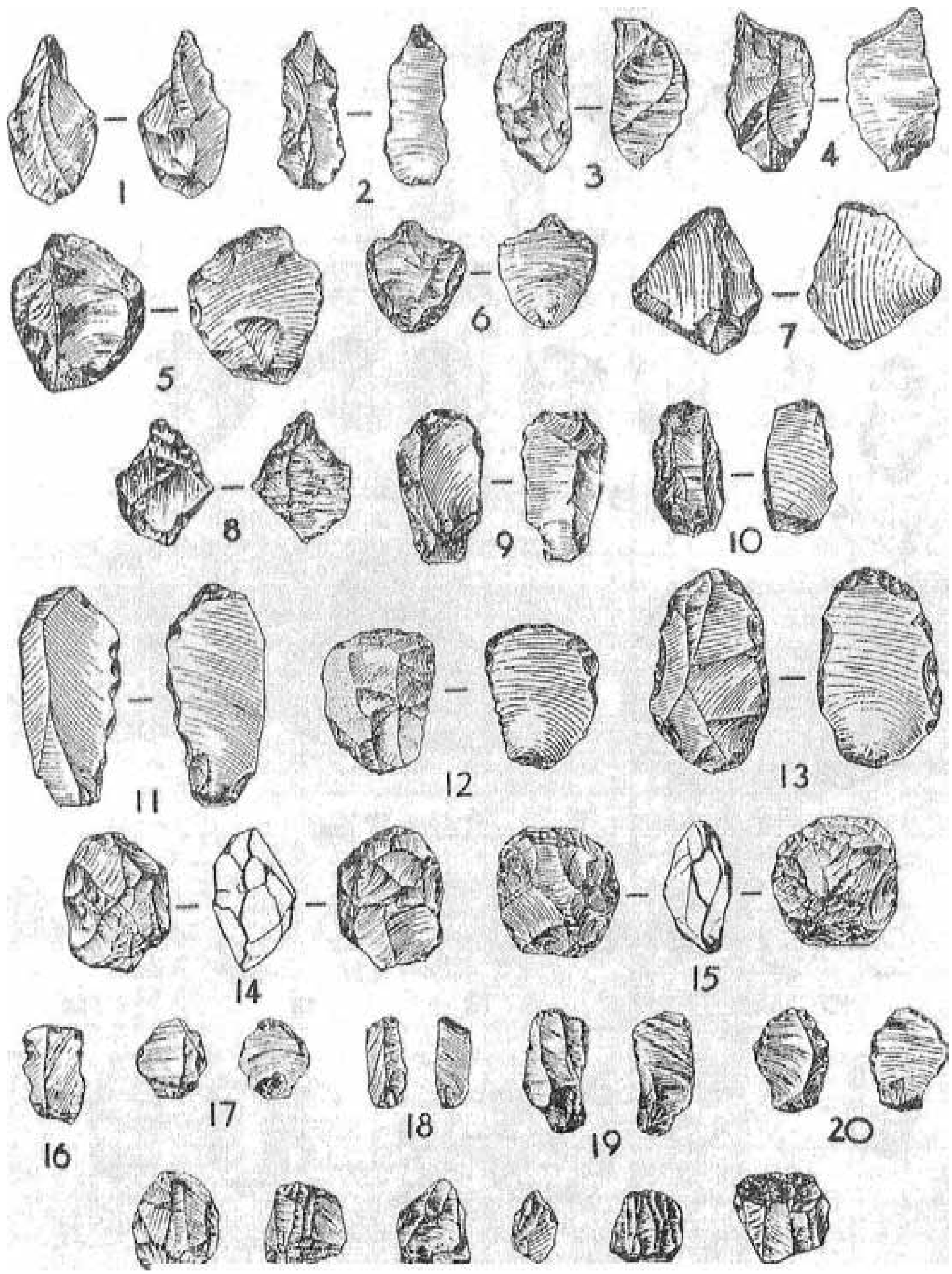


FIG. 4. *Shetrunji valley : late to post-Acheulian artefacts.*



21 22 23 24 25 26

0 5 10 CM

FIG. 5. *Shetrunji valley: stone tools*

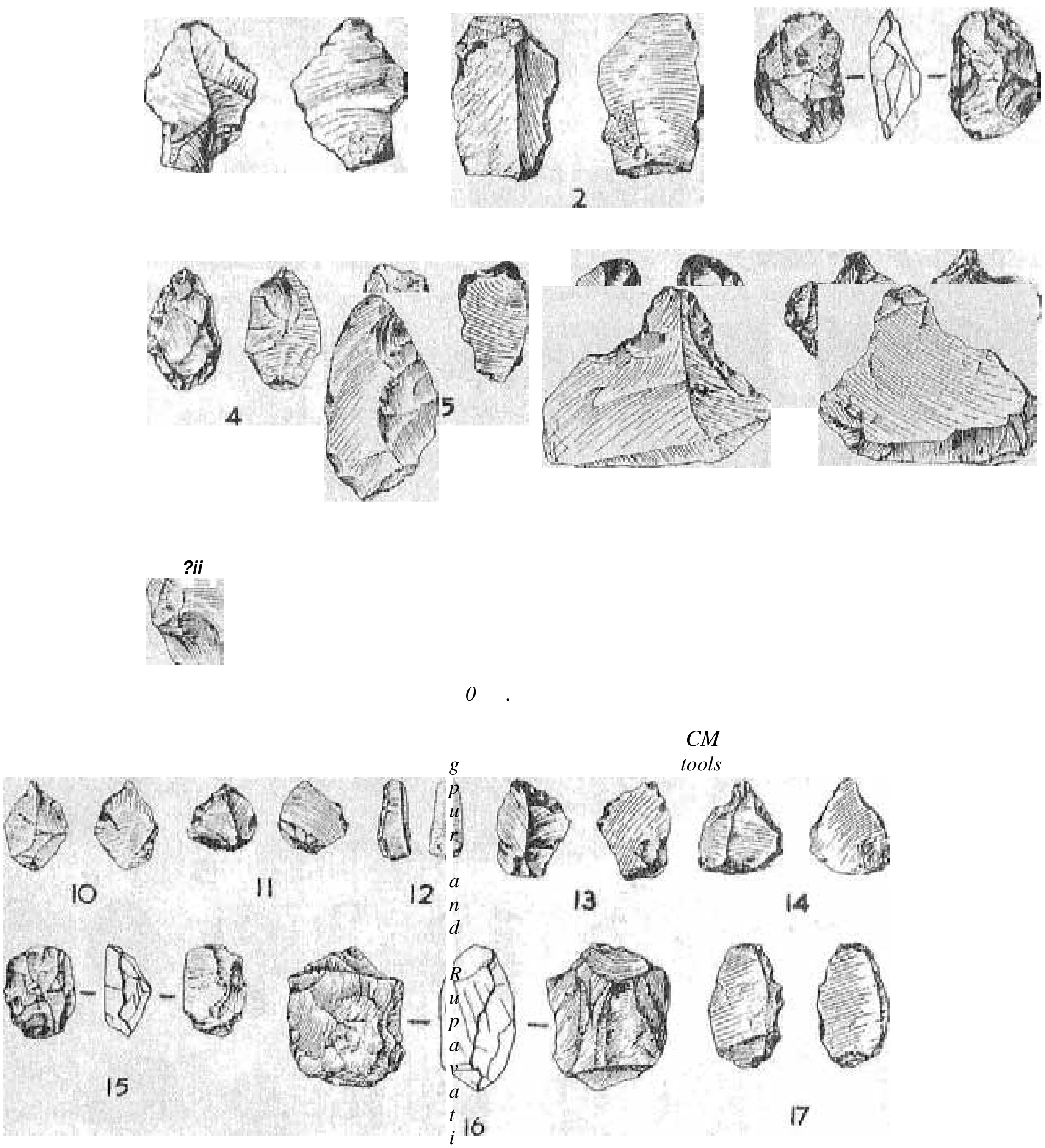


FIG. 6. Sarangpur and Rupavati; stone tools

surrounding at a height of 31 m above MSL. A few microliths on chalcedony were collected from the detrital laterite

The middle and lower courses of the river Shetrunji are cutting through trap rock, and the lower course has not shown so far any indications of sea-level changes. But to the south of Talaja near Gopnath and Jhanjhmar, definite evidences of raised beaches, coastal and dunes and cliffs in the form of miliolite rock have been observed. The miliolites are of two varieties: one is of marine origin and the other is aeolinite. The formation of miliolite shows diverse mode of occurence and field characters and these are the product of fluctuating environmental factors of the Quaternary period.

26. EXPLORATION IN DISTRICTS BHARUCH AND VADODARA---- Under the Savage Archaeology in the Narmada Valley Project area, Shri K.Raghavachari assisted by Sarvashri P.K.Trivedi, K.D. Tripathi, M.M. Hadpad and Atul R.Shah of the Western Circle of the Survey, explored the region and discovered factory sites of a microlithic tool industry at Patelphalia and Vadgam. The tool repertoire includes cores, blades, borers and scrapers made on chalcedony, banded agate and carnelian. Besides, at Surpanesvar, an early historical temple was noticed.

27. EXPLORATION IN DISTRICT BHAVNAGAR—The Department of Archaeology and Ancient History, M.S. University of Baroda, during the course of exploration discovered the following sites of archaeological interest.

District	*Taluk*	*Village/site*	*Cultural assemblage*
Bhavnagar	Bhavnagar	Hathab	Early historical
-do-	Valabhipur	Chamardi	Early historical, medival and painted rock-shelters
-do-	-do-	Loliyana	Harappan, early historical and medieval
-do-	-do-	Nesadi	Harappan
-do-	-do-	Paliad	Early historical
-do-	-do-	Patna-no-Dhoro	Early historical
-do-	-do-	Suravali-jal	Middle Palaeolithic and early historical
-do-	-do-	Valabhipur	Middle Palaeolithic, Mesolithic, early historical and medieval

Further, Shri V.K. Jairath, a research scholar in the above mentioned institution, during his Village-to-Village Survey for Antiquarian Remains, a scheme of the Survey, discovered the following sites of archaeological interest.

District	*Taluk*	*Village/site*	*Cultural assemblage*
Bhavnagar	Gadhada	Siyanagar-no-Timbo (Siyanagar)	Early historical and medieval
-do-	Sihor	Sihor	Early historical and medieval
-do-	Valabhipur	Navagam (Rohiodar-no-Timbo)	Mesolithic and early historical
-do-	-do-	Thapnath	Early Historical

28. EXCAVATION AT VALABHI, DISTRICT BHAVNAGAR.—Drs V. H. Sonawane, V. S. Parekh and K. N. Momin, assisted by Sarvashri R. J. Khatri, N. M. Khatri, C. U. Bhagat and K. C. Malik of the Department of Archaeology and Ancient History, M, S. University, Baroda, under the guidance of Professor R. N. Mehta, conducted excavation at Valabhi, the capital of Maitrakas who once ruled Saurashtra? in Gujarat and parts of Malwa for about three centuries from A.D/480 to 790, The main objective of the excavation was to ascertain the cultural sequence of the sites at Nesadi and Maya-no-Khado.

Excavation revealed that the site at Nesadi represented a single culture belonging to the Harappan times. The structural remains encountered just over the natural black soil, at a depth of 35 to 50 cm, are traces of circular huts (pl. IX A), the flooring of which are made up of rammed clay. The ceramic industry (pl. IX B) is represented by buff, perforated, crude and lustrous red and black-and-red wares. The shapes encountered include dish-on-stand, bowl, goblet, *lota,* basin, dish, bowl with stud handle, etc. A few sherds showing paintings in black-on-red as well as graffiti were also found. Noteworthy finds from the site include terracotta bull figurines, beads, lamps, spindle-whorls, toy-cart wheels, discs and scrapers. On the basis of the material remains, the settlement may be dated in the time-bracket of second-third millennium B.C.

Excavation of the site at Maya-no-Khado revealed occupation deposit of a single period divisible into three phases.

Phase I (first century B.C../A.D. to fourth century A.D.), represented by pre-structural levels, is marked by the occurrence of amphora and red-polished ware. Other finds include bangles of conch shell, beads, votive tanks, miniature Siva-*lingas,* etc.

Phase II (fourth-fifth century A.D.) is represented by the presence of structures built of bricks (size: 37.5 x 22.5 x 5/6 cm). Floorings made of rammed earth, hearths, broken and collapsed walls and traces of furnaces probably meant for smelting iron were also unearthed. The ceramic industry includes amphora, red polished, crude black-and-red, plain and burnished red and black wares. Antiquities recovered include beads and bangles.

Phase III (fifth-eighth century A.D.) is marked by some floors made of well beaten earth and structural remains of reused bricks. The important find of the phase is a gold ring with an intaglio, possibly imported from the Roman world.

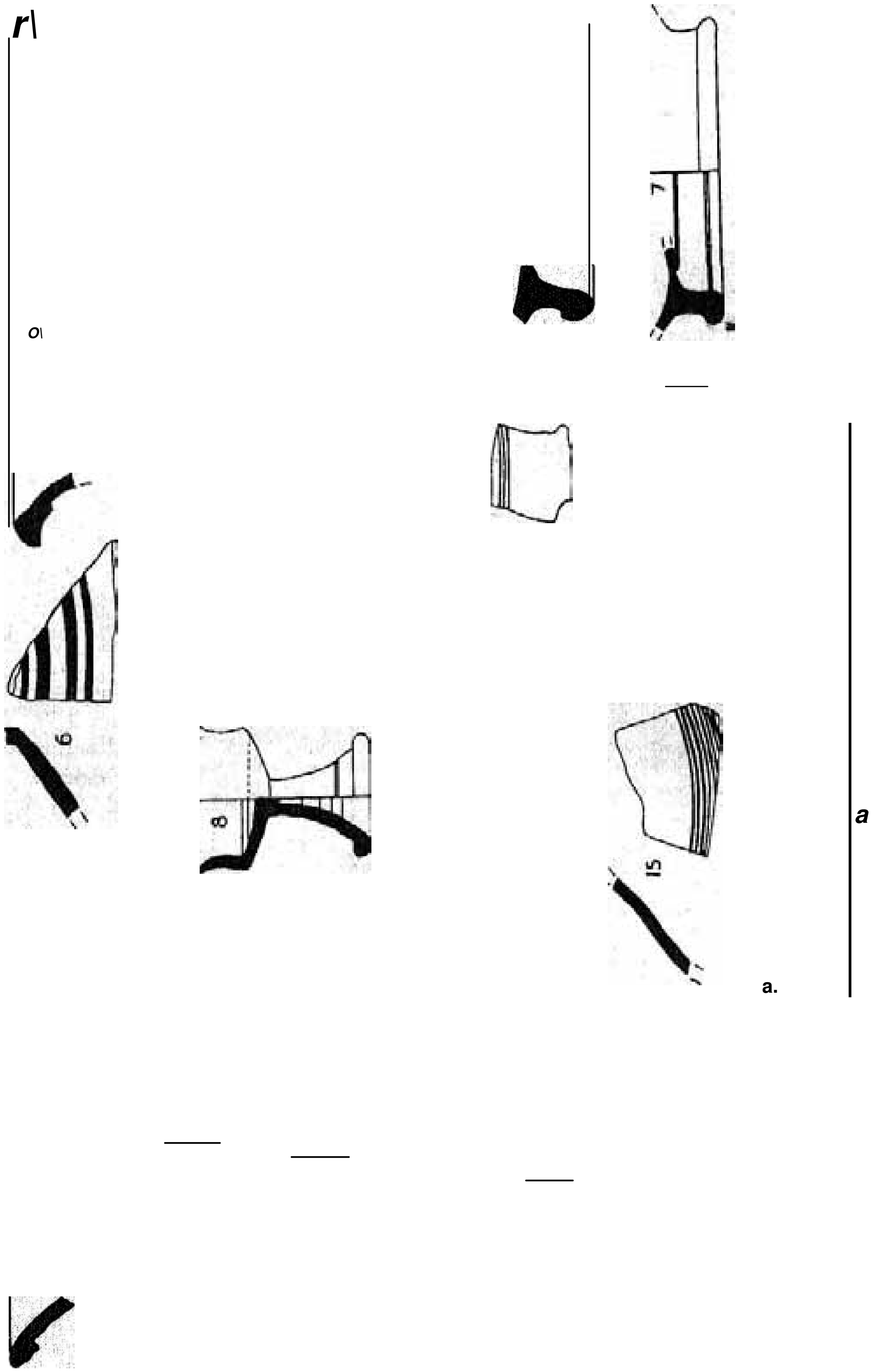
29. EXPLORATION IN DISTRICT JAMNAGAR.—The Department of Archaeology and Ancient History, M. S. University of Baroda, during the course of exploration noticed a Harappan site at Ambhiyapura and sites yielding microliths, burnished black-and-red, crude red and red-polished wares and amphora at Maspur (I, II and III) and Triveni. Further, Saiva and Vaishnava sculptures belonging to medieval period were noticed at Gumati and a *navagraha*-panel at Kalwar.

Shri Kuldeep K. Bhan, a research student of the above mentioned institution, in the course of his exploration discovered the following sites of archaeological interest.

District	*Taluk*	*Village / site*	*Cultural assemblage*
Jamnagar	Bhanwar	Bhango (Juna-Padar)	Harappan and early historical
	-do-	Rupamora	Early historical
-do-	Jodiya	Anand (near river Und)	Middle Palaeolithic
-do-	-do-	Hadiyana I (Sureshwar)	Late Harappan

District	*Taluk*	*Village/site*	*Cultural assemblage*
Jamnagar		Hadiyana II (Mahdeva-Fulwadi)	Early historical
-do-	Jodiya	Kotharia (Nareri)	Medieval
-do-	-do-	Kunda (Kankshnar-nagar)	Medieval
-do-	-do-	Manpar (Juna-Manpur)	Medieval
■do-	-do-	PithadI	Early historical
-do-	-do--	Pithad II (near Aji river)	Middle Palaeolithic
-do-	do- '	Rasnal (Jaidak)	Harappan
-do-		Tarana I	Harappan lithic industry
-do-	-do-	Tarana II	Harappan
-do-	-do-	Tarana III	Medieval
-do-	-do-	Tarana IV	Harappan
-do-	-do-	Asotamota	Medieval
-do-	-do-Kalya	Bamansa	Early historical
-do-	npura -do-	Bhaitya (Panosya-no-Timbo)	Medieval
-do-	-do-	Chachlana (Fulwanti)	Early historical
-do-	-do-	Chandravada I (Chandragada)'	Early historical
-do-	-do-	Chandra.vada II (Vankiner)	Late Harappan
-do-	-do-	Gandhvi	Medieval and a Maitraka temple
-do-		Kalyanpura	Early historical
-do-	-do- -do-	Khakharada I (Amiyana)	Medieval
-do-	-do-	Khakharada II (Samiyana)	Early historical
-do-	-do-	Khizhdad (Chaodu-no-Timbo)	Early historical
-do-	-do-	Lamba (Mohva)	Early historical
-do-	-do-	Limdi	Early historical.
-do-		Nagadia	Mesolithic
-do-	-do-	Nandana	Medieval
-do-	-do- -do-	Ranparda (Mulparda)	Harappan
-do-	-do-	Raval	Medieval
-do-		Tankaria	Harappan
	-do- -do-		

30. EXCAVATION AT DWARKA, DISTRICT JAMNAGAR.—The Western Circle of the Survey, under Shri S. R. Rao carried out excavation in the forecourt of the Dwarkadhish temple, Dwarka, with a view to ascertain, the antiquity of the site which is traditionally associated with Krishna Vasudeva of the *Mahabharata. In* the course of a clearance operation involving the demolition of modern accretions covering the main entrance gate of the temple,


6
7
8
15

a few sculptures of the eighth-nineth century A.D. were recovered, The excavation in the western half of the forecourt of the temple brought to light a well preserved temple of Vishnu, assignable on stylistic grounds and ceramic evidence, to the ninth century A.D. The pottery from the contemporary layers consists of the slipped red ware of pre-Solanki times. The temple, rectangular on plan and facing east, consists of *garbha-griha, antarala, sabha-mandapa* and *mukha-mandapa* while the upper courses of the plinth and wall are elegantly covered with *kirti-mukhas,* animal friezes and panels of devotees and gods, the lower courses being plain. The figures of Vishnu, Varaha, Lakshmi etc., carved in bold relief suggest that the temple was dedicated to Vishnu. There is no *yoni-patta* but part of a pedestal of the cult image is *in situ* in the *garbha-griha.*

Four trenches (DWK-1 to DWK-4) were laid covering an area of 16 x 12 m in the western half of the forecourt and 10 x 6 m in the eastern sector. The natural soil was reached in DWK-3 at a depth of 10.10 m in one corner and in the rest of the portion the bed rock was exposed at a depth of 9.40 m. The subsoil water prevented digging below 10 m depth in DWK-1 and DWK-4.

DWK-1, was laid on the northern margin of the newly-discovered Vishnu temple (Temple III) brought to light remains of two earlier shrines. It is possible to arrive at a tentative chronology of the successive townships of Dwarka based on the stratified ceramic evidence (fig. 7). Layers 2 and 3 yielded mixed material caused by the digging for the foundations of modern buildings. A regular stone pavement, perhaps part of a paved road, was noticed in layer 3. Underlying the five courses of the foundation of Temple III, the plinth of Temple II can be distinguished by the presence of carefully-dressed large blocks of sandstone, The foundation of this temple was laid in layer 6 A, below which are the remains of the earlier Temples I with its foundation laid in layer 8. In all, seven courses of this structure had been traced. The stones used are smaller in size; moreover, the outer face of the plinth was lime-plastered and some traces of paintings in red ochre on the mouldings are fairly visible. Obviously the plastered courses must have stood above the ground level.

From layer 3 glass bangles and glazed ware were recovered while from layer 4 a red slipped ware is noticed for the first time. Layers 6 to 7 are composed of compact greyish clay, and layer 8 was a mixture of sand and clay in which the Red polished Ware (pl. X A) and small copper coins known as the *karshapanas* were found. Layer 9 is a sandy deposit with patches of silt. Being disturbed a few rolled sherds of Red polished Ware and the Lustrous Red Ware were found together. Layer 10, which is again a deposit of sand and brownish silt in alternate patches, yielded unrolled sherds of the Lustrous Red Ware. (pl. X A). At least two types can be made out in this ware, and these are the stemmed bowl and the small bowl with everted rim, both occurring in Rangpur III. On ceramic evidence, layer 10 is dated to area fourteenth century B.C.

DWK-2, laid on the southern margin of Temple III, brought to light a massive rectangular stone structure, which at first sight looks like a well but from the constructional features are not those of a well. Built in three phases it has recesses in its eastern and southern walls built on the lintel-bracket principle, suggesting thereby that the structure was not used as a well. This inference is supported by the fact that the inner face of the walls is plastered with lime. Further, if it were a well, a temple (Temple III) would not have been built on its northern wall. On the other hand, the openings in the southern wall suggest that they could have served as secret passages, to which the *Harivamsa* makes a reference. The stratigraphy of the trench DWK-4 on the southern edge of DWK-2 confirms that the well-like structure was built in three phases, each time the height being raised by 2 to 2.5 m and the opening in one of the walls might have served as a secret passage referred to in the *Vishnu* and *Bhagavata Puranas.* The stratigraphy of the filling (rubble and debris) in the well-like structure is not reliable, but the occurrence of the copper coins of Muzaffar Shah III in the upper levels and the Red polished Ware in the middle levels are noteworthy.

The main purpose of laying the trench DWK-3 in the eastern half of the forecourt was to ascertain whether any building existed here during the early historic period and whether the habitation deposit of the Lustrous Red Ware noticed in DWK-1 extended over a larger area. Excavation revealed stone structures and the habitational remains of the Lustrous Red Ware culture. Further, the alternative layers of sand and habitation-debris made it clear that during the first millennium B.C. the township was destroyed more than once by the storm waves.

Layers 1 to 4 consist of loose greyish earth and debris. Two structural phases were noticed here. The earlier one is assignable on numismatic evidence to the fifteenth century A.D. and its foundation is laid in layer 4. The pottery consist of course grey and red wares. Polychrome glass bangles and glazed pottery were also found in layer 5. Spouted red ware vessels were common during this occupational phase. Layers 6 and 7 consist of fine sand with intervening . patches of ash. The Red polished Ware occurs in layer 7. The layer 8 composed of compact brownish earth, yielded plain and painted wares. The black-on-red painted ware, occurred for the first time here, was different from other painted (Rangamahal or any other) wares of the early historic period in Saurashtra. Its fabric is thin, and the paintings, mostly consisted of thin horizontal lines, are carefully executed. Layer 9 below it is a deposit of yellowish sand overlying layer 10 which is a greyish silt yielding a few sherds of the Lustrous Red Ware. Three jar rims of the late Harappan phase were also noticed. Layer 11, a barren deposit of sand, overlies the sandstone bed-rock which elsewhere (outside the Dwarka town) is found to overlie miliolites. The water level was reached at a depth of 9 '60 m. Further digging did not yield any human artefacts. From the well-stratified deposit in DWK-3 it is possible to conclude that the first settlement at Dwarka was made during the late Harappan and Lustous Red Ware (post-Harappan) periods, but the township might have been a little away from the present site. A storm wave which destroyed the earlier township was responsible for the deposition of the habitational debris here and sealing it with sand. As heavy stones were used for building, the entire houses could not be easily carried over long distances by tides, hence only lighter materials like pottery, shells and metal objects were encountered in tidal debris. Some time after the abandonment of First Dwarka in the later half of the second millennium B.C. a new folk using the thin black-on-red painted ware occupied the site in the first half of the first millennium B.C. This is the Second Dwarka which also came to an end after a few centuries, and may be assigned to 900-500 B.C. (?). In DWK-4, there is clear evidence of the destruction of the second township by a storm wave. The next occupation of the site is assignable to the first century B.C., if not earlier. The habitational deposit of the Third Dwarka noticed in DWK-1 also yielded the *karshapanas* and the Red polished Ware. Temple I was built some time later in this phase. The prosperity of the town can be judged from the abundance of the painted and plain wares, metal objects etc. The construction of the Temple I noticed in the DWK-1 can be assigned to the first century A.D., if not to the first century B.C.

DWK-4 connected to DWK-2 and extended south-westward revealed three working levels corresponding to three phases of the construction of the well-like structure noticed in DWK-2. The first phase of construction was made by digging into a whitish sandy layer, layer 11, deposited during a storm wave. The succeeding layer 10 was composed of brownish silt in which the Lustrous Red Ware was found. Further above, the layers 9 and 8 both yielded the thin black-on-red painted ware of the first millennium B.C. It appears that the well-like structure was built during the latter part of the second millennium B.C. as indicated by the foundation trench laid in layer 11 which also yielded the sherds of Lustrous Red Ware. The upper portion of this structure was destroyed by the storm wave and the damaged part is sealed by the layer 10, but this layer was again cut into for raising the height of the structure by four courses. The working level of the second phase is marked by a floor laid on layer 9. Later on this phase of occupation suffered damage as suggested by the sealing layer 7 in which the Red polished Ware was present. In the third phase its height was again raised. Its working

level was layer 6 A which consisted of *kankar* and stone slabs *in situ.* The sand deposits in the layers 6 and 5 suggested heavy water action. In layer 4, a stone paved path corresponding to the one in DWK-1 was encountered.

Layers 1 to 3 represented a mixed deposit deliberately rammed of late medieval and modern times. The alternate layers of the habitational debris and sand (layers 6 to 11) in this cutting confirmed that Dwarka was destroyed at least thrice by storm waves between the fourteenth century B.C. and the second century A.D.

While pulling down a modern wall abutting the ancient enclosure wall flanking the northern gate *moksha-dvara,* the beatifully-carved pillars and heavily-moulded courses of the plinth of a large temple, Temple IV, were exposed. Its full plan could not be ascertained as it was hidden under the superimposed structures. On stylistic ground the temple may be assigned to the twelfth century A.D. Its destruction was caused by vandalism unlike the Temple III which could be attributed to a storm wave. The latter structure is fairly well preserved by the sealing layer of sand deposited during the tidal wave.

The following are the cultural sequence of Dwarka as suggested by structural and ceramic evidences found in the present excavations.—

Successive habitation	*Age*	*Evidence*
Dwarka 1	Fifteenth-fourteenth century B.C.	Lustrous Red Ware and late Harappan ware
Dwarka 2	900-500 B.C. (?)	House floors, thin black-on-red ware
Dwarka 3 to 5	Second century B.C. to twelfth century A.D.	Temple I (first century B.C.-second century A.D.), Temple II (third-seventh century A.D.) Temple III (eighth-twelfth century A.D.)
Dwarka 6	Twelfth-thirteenth century A.D.	Temple IV
Dwarka 7	Thirteenth-fifteenth century A.D.	Inner and outer portions of the Dwarkadhis temple V
Dwarka 8	Post-sixteenth century A.D.	Modern township

31. EXPLORATION IN BET DWARKA AND VARWALA.—These two mounds also yielded late Harappan pottery (pi. X B). Besides, several new sites were also located in the fifties and sixties at Amra, Ladhabawal, Vasai and other villages around Jamnagar which suggest that the northern or north-western parts of Saurashtra were occupied during the late Harappan times.

HARYANA

32. EXPLORATION IN DISTRICT GURGAON.—Under the problem oriented survey, the North-Western Circle of the Survey, discovered twenty-eight sites yielding late Harappan and Ochre-coloured pottery at Basenda, Jasal, Khandavia and Nurgarh, and a historical mound at Sikandarpur, all in the Sahibi Valley.

33. EXPLORATION IN DISTRICT GURGAON AND MAHENDRAGARH.—Sarvashri R. P. Sharma and Lal Chand Singh assisted by Sarvashri Budhi Singh and D. D. Dogra of the Delhi Circle of the Survey, carried out exploration under the problem oriented survey with the view: (i) to trace the migrational pattern of the late Harappan culture along the river Sahibi,

(ii) to ascertain the cultural assemblage of the late Harappan, and (iii) to know the cultural sequence of the region. An intensive exploration was undertaken for nearly 10 km on either side of the river from Siwari in the north to Kot-Qasim in the south, and located the following sites of archaeological interest.

District	*Villagejsite*	*Cultural assemblage*
Gurgaon	Baliar Kalam	Early historical
-do-	Basantpur	Early historical
-do-	Bhasonda	Early historical
-do-	Garhi Hussain	Early historical
-do-	Hansipur	Medieval
-do-	Hera Heri	Early historical
-do-	Hussein-ka-Gadana	Early historical
-do-	Jasat	Early historical
-do-	Jat Borthal	Early historical
-do-	Jatuala	Late medieval
-do-	Jatuali	Late medieval
-do- ■	Jori-Sampka	Early historical
-do-	Kakoria	Medieval
-do-	Mahchama-ka-khera	Early historical
-do-	Mandhiala	Early historical
-do-	Mojabad	Medieval
-do-	Nurgarh	Early historical
-do-	Rajpur	Late medieval
Mahendragarh	Ashiaki	Early historical
-do-	Bhadsana	Early historical
-do-	Bhandak	Medieval
-do-	Budhi Bawal	Medieval
-do-	Gugana	Early historical
-do-	Jaron	Early historical
-do-	Jathal	Early historical
-do-	Jokhas Quyampur	Late medieval
-do-	Kanhadka	Late Harappan
-do-	Karoli	Early historical
-do-	Khatuli	Late Harappan
-do-	Mukandpur Bassie	Early historical
-do-	Naginawar	Medieval
-do-	Nand Rampur Bas	Late Harappan
-do-	Rabarka	Early historical
-do-	Railawas	Historical, late medieval *and* a temple
-do-	Salarpur	Early historical

Though the exploration is in progress, a tentative inference could be made that in the late Harappan times migration took place only on the right bank of the river Sahibi, as all the three late Harappan sites referred to above as well as Dhansa and Jodhapur noticed earlier respectively by the Kurukshetra University and the Department of Archaeology and Museums, Government of Rajasthan, are on the right bank of the river.

34. EXCAVATION AT AGROHA3 DISTRICT HISSAR.—In continuation of the last year's *(1978-79,* p. 68-69) work, the Department of Archaeology, Government of Haryana, resumed excavation on the northern slope of the mound. Excavation revealed five cultural periods ranging in date from *circa* third-fourth century B.C . to twelfth-thirteenth century A.D.

Period I *(circa* third-fourth to second century B.C.) is marked by the occurrence of the Northern Black Polished Ware and red ware of coarse fabric (seems to be water-logged), besides a few sherds of grey ware. No structural activity was noticed. Antiquities recovered include: terracotta bird and animal figurines, beads, balls; bone and shell objects; and iron and copper objects.

Period II *(circa* first century B.C. to the beginning of the Christian era) is characterized by the presence of red ware represented by such shapes as bowl, sprinkler and lid-cum-bowl. A few sherds show stamped designs over them. The structural activity was represented by walls built of baked and unbaked bricks of the sizes 42 x 27 x 6 and 40 x 22.5 x 5 cm. The notable antiquities recovered include: terracotta toy-cart, disc, gamesman, moulds; shell and glass bangle pieces; iron and copper objects; and semiprecious stone objects. However, most important finds of the Period are a few copper coins and a clay seal bearing a legend reading *Sri Sakasa* in Brahmi characters of the early Christian era.

Period III (second to sixth century A.D.) is characterized by the occurrence of red ware painted in black, besides dull and bright red ware with stamped designs like *tri-ratna* panels without hatching, moon in circles, etc. The shapes encountered are bowl, basin, spouted vessel, lamp, miniature vase, trough and jar. The structural activity of this period showed four to five phases. Among the antiquities recovered, mention may be made of terracotta animal figurines and rectangular colouring discs. Noteworthy is a clay seal with legend *Sri(sa)Dhuvrndasya* (?) in Brahmi characters of fourth-fifth century A.D.

Period IV (seventh to eleventh century A.D.) is marked by the presence of red ware represented by distinctive types like bowls with flared rim, bowls with knife-edged rim and bowls with ring-base. Two rectangular structures with mouldings and with *pradakshina-patha* paved with reused bricks were encountered. Hearths and floors made of rammed earth were also noticed in some houses. Noteworthy antiquities recovered include a few medieval copper coins, terracotta human and animal figurines with incised designs and a few fragment of unidentified sculptures.

Period V (twelfth to thirteenth century A.D.) is represented by glazed and dull red wares. The structures were built with reused bricks over the debris of earlier periods. However, some of the houses with floors and hearths were found built of baked and unbaked bricks. Antiquities discovered include copper balls, bangle pieces, etc.

35. EXCAVATION AT BALU, DISTRICT JIND.—In continuation of previous year's *(1978-79,* p. 69) work, the Department of Ancient Indian History, Culture and Archaeology, Kurukshetra University, Kurukshetra, resumed excavation under the direction of Drs U. V. Singh and Suraj Bhan, assisted by Drs S. B. Singh and S. P. Sukla, with the main objective of ascertaining the extent and nature of the 12m wide mud-brick platform-like structure encountered earlier in the Harappan level.

Excavation on the southern end of the mound revealed further extension as well as the eastern arm of the above-mentioned platform. This massive structure was found built over a sterile deposit of hard earth overlying a clay deposit looking like a bund or rampart. Its extant width and height are 12.7 and 1 m respectively, and is constructed over a sandy deposit which showed no traces of human activity. However, the nature and purpose of this clay deposit remains to be ascertained.

Excavation on the top of the mound revealed a 85-cm wide side-wall of a house-complex having eight courses of mud-bricks (size: 38 x 19 x 9.5 cm). A few steatite beads were collected

from the flooring of this complex. Besides, a. number of walls, floor levels, fire-place and post-hole were also encountered at different levels. During the excavation, a number of pits cut into humus yielding baked bricks measuring 27x27x9 and 37.5 x 22.5 x 8 cm mixed with proto-historic pottery were observed. Antiquities recovered from the excavation include: terracotta beads, bangles, plano-convex discs, triangular cakes, animal figurines, toy-cart wheels, skin-rubber; faience bangles, beads, fragment of a pot and a seal with geometric designs; stone" beads, muller, chert blades; and copper ring, wire and pin. The pottery encountered in this seasons work is similar to the one found last year.

JAMMU AND KASHMIR

36. EXPLORATION IN DISTRICTS ANANTNAG AND SRINAGAR.—Professors R. V. Joshi, M. K. Dhavalikar, Dr S. N. Rajaguru, Shri B. C. Deotare and Kumari Kiran Kaul of the Deccan College Post-graduate and Research Institute, Pune, carried out field studies around Burzahom, Nagdandi (neolithic sites) and Semthan (early historical site) and collected soil and sediment samples for laboratory analysis, with the objective of studying geomorphological, chemical and cultural aspects of the neolithic and early historical sites in the Kashmir Valley. The team examined late Pleistocene formations around Achbal, Brijbihara, Burzahom, Ganeshpur, Gulmarg, Pahalgam, Panpur and Tanmarg. Further, samples _ of loess-like formations and associated dark brown bands (or buried soils ?) were collected for laboratory testing. These preliminary field and laboratory studies bring out the following aspects.

Habitational deposits of Burzahom, Nagdandi and Semthan are rich in phosphate contents (from 0.5 to 0.8 per cent) and are distinctly alkaline (pH varying from 8 to 8.5 per cent). Contemporary non-agricultural soils are poor in phosphate (about 0.06 per cent). Suspected habitational debris from Nagdandi also yielded a high (0.44 per cent) phosphorus content, thereby confirming the habitational deposit at Nagdandi during neolithic times. Soils from neolithic sites are richer in organic carbon (about 1 per cent) than in early historical site of Semthan. Presence of high organic carbon in neolithic habitational debris indicates lesser degree of oxidation, probably in a climate cooler than of today.

Late Pleistocene deposits in the valley are predominantly yellowish brown, silty, vary in pH from slightly acidic to moderately alkaline and are poor in. organic carbon. On the other hand, associated dark bands are brown to dark brown, more clayey than yellowish silt and contain organic carbon between 1 and 2 per cent. These dark layers sometimes pinch out and do not always show pedological characters. At places, they are underlain by finely laminated sands. It appears that some of the dark brown layers are stagnant water deposits. Problems of the origin of these late Pleistocene formations in the valley are being persued.

Field studies show that neolithic and early historical settlement, have always taken place on a terrace surface developed on late Pleistocene formations. The river Jhelum and its tributaries were flowing couple of metres higher than its present bed-level during neolithic and early historical times. The river Jhelum reached its present bed-level in eighth century A.D. or even earlier.

37. EXPLORATION IN DISTRICT DODDA.—Shri S. N. Jaiswal assisted by Sarvashri Pramod Singh and M. L. Nimesh of the North-Western Circle of the Survey, in the course of exploration discovered: remains of a stone temple and sculptures of Lakshmi-Narayana, Siva-Parvati, Mahishasuramardini, Durga and *nagi* belonging to eleventh century, remains of *baolis, kunda* and wooden temple belonging to nineteenth century at Agral; remains of ancient temple and sculptures of Siva-Parvati, Lakshmi-Narayana seated on Garuda and with image of Siva with terrifying face, protruded eyes and horns over the head, on the back side, fixed on the *yoni-pitha* of Siva-*linga*, belonging to fourteenth-fifteenth century and remains of *baolis* of the nineteenth

century at Barsgaka; remains of a fortress built of rubble with lime mortar, locally known as Mughal fort, of seventeenth century, at Bhandal-Kut; remains of eight *baolis* in a row of Various sizes, belonging to eighteenth century at Bindrawan; ancient site yielding pottery and antiquities of Kushana period and remains of temple and sculptures at Harial; ancient site of early medieval period and wooden temple belonging to eighteenth century at Halta; remains of temple built of *lakhauri* bricks and wood, belonging to eighteenth century at Kishtwar; early medieval habitation site, remains of *baolis* and temple and *eka-mukha Siva,-linga* and Siva-Parvati and *nandi,* probably belonging to eighteenth century at Mandi; temple built *of lakhauri* bricks and wood datable to nineteenth century at Nagin; ancient habitation site yielding pottery of Kushan period, a monolithic pillar of 2 m height and 3.25 m in circumference, semi-cylindrical in shape with projection on top and phallus-shaped, and remains of wooden temple of eighteenth century at Puchal; remains of wooden temple belonging to eighteenth century at Sarkut; and remains of wooden temple dedicated to Siva, belonging to eighteenth century and *linga,* with carvings on all four sides, probably belonging to tenth-eleventh century at Thakrai.

38. EXPLORATION IN DISTRICT JAMMU.—In continuation of the last year's *(1978-79,* p. 25) work, Sarvashri G. S. Gaur and J. M. Thapar of the North-Western Circle of the Survey, resumed exploration in the District and discovered an early historical habitation site at Batara (Gurubaba-ka-Tibba), a site yielding remains of Kushana period at Chandian (Jafar chak) and a medieval habitation site at Garh-ka-Maura.

KARNATAKA

39. EXCAVATION AT HAMPI, DISTRICT BELLARY.—In continuation of the last year's *(1978-79,* pp. 43-45) work, the Mid-Southern Circle of the Survey, under the joint direction of Sarvashri V. Mishra and R. C. Agrawal, assisted by Sarvashri C. B. Patil, G, S. Narasimhan, N. S. Pawar and Harish Chandra, resumed excavation in the Mint area.

Excavation in the north-eastern part of the Mint area revealed remains of a rubble wall which seems to be continuation of such a wall exposed earlier in the western part. The exposed length of the wall is 40 m, width being 1.2 m. The wall was having a casing of moulded and dressed stones on the exterior and lime plaster on the interior. A stone built platform, of 1 m height, for a chamber (13 x 13 m) of rubble walls plastered with lime on both sides, was also exposed. It was provided with a flight of steps on the east, the steps being made of rubble and neatly plastered. The flooring of the complex was made up of *kankar* mixed with lime and then plastered. A passage having lime plastered flooring was found by the side of the complex. Besides, remains of small rooms with flight of steps were also exposed. The walls of small rooms exposed on the top of the stone gateway were probably of guard rooms. The entrance flooring of the gateway was found provided with a platform-like structure measuring 5.2O x 5.20 cm x 25 cm. This structure had a flight of two steps built of dressed stone slabs and plastered on the exterior as well as on the interior. The steps were flanked by crude lion balustrades. Further, a passage leading to a small gateway in the cyclopian wall was cleared to expose the road level inside the Mint area. The ceramic industry is represented by China ware, black and plain red wares. The types encountered are bowl, dish, jar, basin, carinated *handi,* etc. Noteworthy antiquities include: stucco figures; iron nails, hooks, fragments of sword; quern; ivory finial; and copper coins.

40. EXPLORATION IN DISTRICT BIDAR.—The South-Eastern Circle of the Survey, in the course of exploration, brought to light sites yielding Middle Palaeolithic tools at Byalalli, Dongarpur, Gorchicholli, Khudampur and Lakkanganj, neolithic and early historical site at

Yannukara, stone sculptures from Bhalki and Bhatmbra and *naga* icons from Lakkangaon, and temples datable to *circa* seventh century A.D. at Adevakottai, Kandaivakottai, Prugalur, Sothuppaliyan and Yampatty.

41. EXPLORATION IN DISTRICT GULBARGA __ In continuation of his last year's *(1978-79,* p. 26) field-work, Dr K. Paddayya of the Deccan College Post-graduate and Research Institute, Pune, undertook further exploration in the Hunsgi Valley in Shorapur Taluk, with a view to making intensive study of the Acheulian and other Stone Age sites of the area. The discoveries made during this survey are as follows.

The eastern and north-western sectors of the valley have been explored thoroughly, especially in regard to the Acheulian sites. Although sites of other Cultures are not lacking, these parts have failed to produce any evidence or Acheulian occupation. The absence of these sites is not unexpected, because the rugged and broken-up nature of the terrain in these sectors appears to have served as a negative factor for human occupation.

However, the valley-floor has given evidence of eight new Acheulian localities. These are located at Devapur (two localities), Hunsgi (two localities), Kaldevanhalli (three localities) and Kupi (one locality). These are in the nature of discrete artefactual scatters associated with occupation activities. One of the Devapur localities covers an area of 60 x 40 m. The localities at Devapur and Hunsgi form part of the Hunsgi cluster and are extensive in terms of artefactual yields. Those at other sites, on the other hand, belong to the valley-floor group. Limestone is the common raw material of the assemblages; these are made up of waste products as well as finished tools (cleavers, handaxes, knives, hammerstones, chopping tools, etc.).

Middle Palaeolithic localities have been discovered at four places: Hunsgi (four localities), Isampur (two localities), Matkandevanahalli (one locality) and Salgondi (one locality). These are either workshops or occupation spots. Reddish brown chert is the common raw material of the assemblages which are composed of debitage as well as finished tools (scrapers, borers, points, etc).

This survey has also resulted in the discovery of numerous Mesolithic localities. The places where these occur are: Balsattihal (two localities), Behatti (two localities), Bankanhalli (two localities), Hebbal Buzurg (three localities), Hunsgi (two localities), Kachankur (one locality), Kakkera (two localities), Kaldevanhalli (one locality), Kamnatgi (two localities), Kangenhalli (three localities), Kolihal (two localities), Kupi (one locality), Malnur (three localities), Manjlapur (one locality) and Salvadgi (two localities).

Almost all these localities are in the nature of camp or occupation sites, and are located either close to the foot of limestone plateau or an ephemeral streams. Whitish chert is the common raw material; there is clear evidence that nodules of material were transported by man to these spots and worked upon. Some of the artefactual scatters are very extensive, covering several acres of ground. The finished tools include retouched blades, points, scrapers, burins and microlithic types.

KERALA

42. EXPLORATION IN DISTRICT PALGHAT.—Shri M. Raman Namboodiri of the Southern Circle of the Survey, during the course of his exploration, noticed a group of about forty menhirs at Kottathara in Attappady tribal area; and another group of three menhirs at Anakatty on the bank of the river Koduveri, a tributary of the river Siruvani. Both the sites are in Mannarghat Taluk. All the menhirs are of granite and most of them are intact.

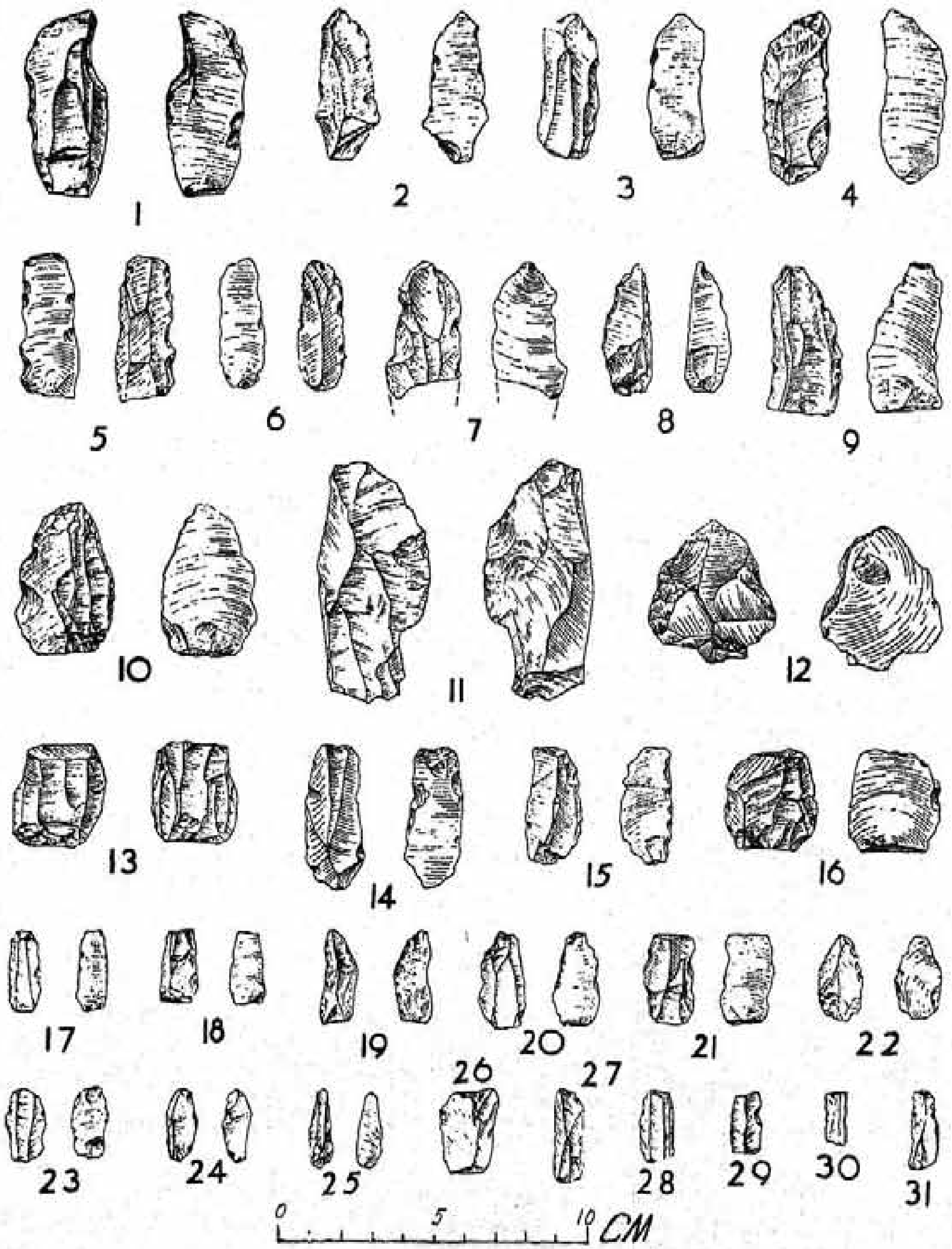


FIG. 8. *Indravati river valley : mesolithic river valley.*

MADHYA PRADESH

43. EXPLORATION IN DISTRICT BASTAR.—In continuation of last season's work, a reconnaissance survey was carried out by Shri P. B, S. Sengar, assisted by Sarvashri A. J. Nambhiraju and J. S. Dubey, led by Shri A. K. Sharma under the guidance of Dr K. D. Banerjee of the Prehistory Branch of the Survey, with the main objective of ascertaining the very character of the Mesolithic (Late Stone Age) industries found in geological context in the valley of the river Indravati and its tributaries. A large number of surface and stratified and a few factory sites belonging to Middle Palaeolithic and Mesolithic industries (fig. 8) were discovered in this region. The sites generally located either on the flat tops or slopes of small hillocks on the lateritic surface within the average height of 564 to 594 m above MSL. These tools occur in large numbers mostly embedded in the uppermost part of the detrital laterite or in the gravels or clays derived from laterite. The raw material used for the preparation of tools is predominantly chert and occasionally quartz. The tools are without exception heavily stained by laterite, Since the finished tools (pl. XI A) occur in very small proportion along with a large quantity of unfinished tools, cores, waste flakes and fragments of chert and quartz nodules, they seem to have been manufactured in the same localities. The finished tools include points, scrapers, borers or awls, lunates, blades, fluted cores, etc. No pottery has been found associated with these assemblages at any of these sites.

A few neolithic implements (pl. XI B and fig. 9) were also collected from Ambaguda, Balipara (Bhond), Kalipur, Parpa and Tutideoda. The site at Tudideoda yielded one small ground celt *in situ* in the uppermost part of lateritic gravel. The following are the explored sites.

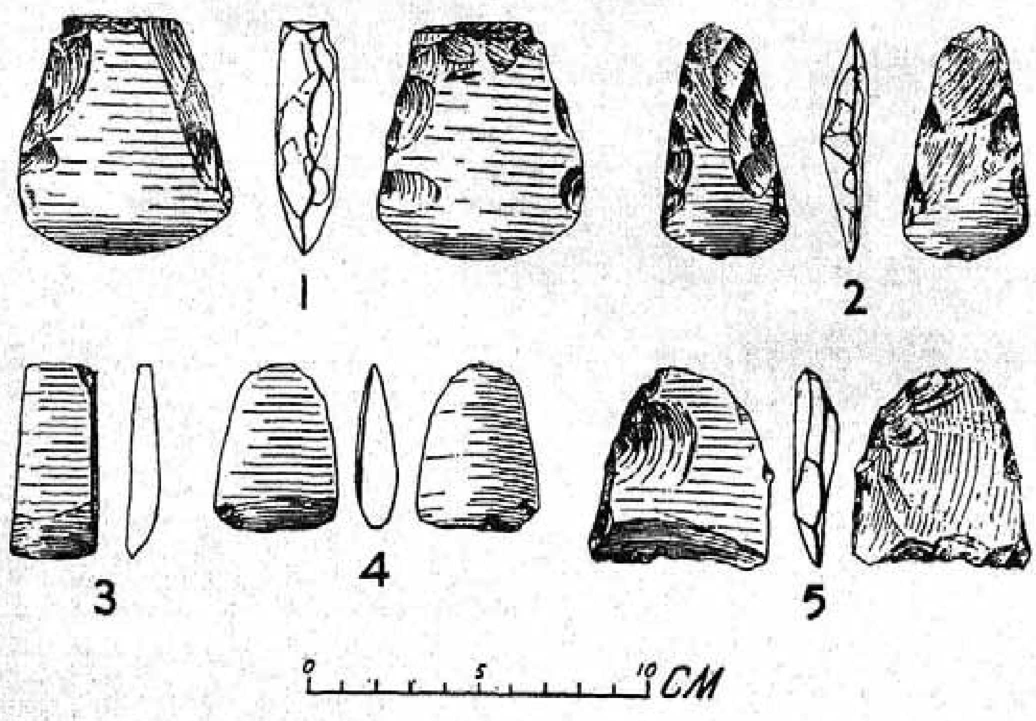


FIG. 9. *Parpa, Kalipur, Tutideoda, Balipara and Ambaguda* : *neoliths*

District	*Taluk*	*Village/site*	*Cultural assemblage*
Bastar	Dantewara	Dantewara	Mesolithic
-do-	Jagdalpur	Alnarpara	Mesolithic
-do-	-do-	Amaguda	Middle Palaeolithic and Mesolithic
-do-	-do-	Amariguda	Middle Palaeolithic and Mesolithic
-do-	-do-	Ambalal (Chhota)	Mesolithic
-do-	-do-	Ambaguda	Mesolithic and neolithic
-do-	-do-	Arapur	Mesolithic
-do-	-do-	Ashnar	Mesolithic
-do-	-do-	Badlawand	Mesolithic
-do-	-do-	Bagenpal	Mesolithic
-do-	-do-	Baisbandha	Mesolithic
-do-	-do-	Bakawand	Middle Palaeolithic and Mesolithic
-do-	-do-	Balenga	Mesolithic
-do-	-do-	Baniagam	Mesolithic
-do-	-do-	Baniagaon	Mesolithic
-do-	-do-	Banpuri (Chhapar)	Mesolithic
-do-	-do-	Barpaguda	Mesolithic
-do-	-do-	Bastar	Middle Palaeolithic and Mesolithic
-do-	-do-	Bendri	Mesolithic
-do-	-do-	Bhaludongari	Mesolithic
-do-	-do-	Bhaludongai (Dasapal)	Middle Palaeolithic and Mesolithic
-do-	-do-	Bhaluguda	Mesolithic
-do-	-do-	Bhejripadar	Mesolithic
-do-	-do-	Bhond	Mesolithic and neolithic
-do-	-do-	Birsaguda	Mesolithic
-do-	-do-	Borpadar	Middle Palaeolithic and Mesolithic
-do-	-do-	Burunpal	Mesolithic
-do-	-do-	Bursundi	Mesolithic
-do-	-do-	Chedipadar	Mesolithic
-do-	-do-	Chikhal-Karanji	Mesolithic
-do-	-do-	Chilkuhutti	Mesolithic
-do-	-do-	Chiurgam	Mesolithic
-do-	-do-	Chokawada	Mesolithic
-do-	-do-	Chokur	Middle Palaeolithic and Mesolithic
-do-	-do-	Dabguda	Mesolithic
-do-	-do-	Dasapal	Mesolithic
-do-	-do-	Deoda	Mesolithic
-do-	-do-	Deora	Mesolithic
-do-	-do-	Deorgaon	Mesolithic
-do-	-do-	Dhanpunji (Devaguda)	Mesolithic
-do-	-do-	Dhodrapal	Mesolithic
-do-	-do-	Dongariguda	Mesolithic
-do-	-do-	Dongriguda	Mesolithic
-do-	-do-	Dummarguda	Mesolithic
-do-	-do-	Duragaon	Mesolithic
-do-	-do-	Durkabeda	Mesolithic
-do-	-do-	Durkiguda	Mesolithic

District	*Taluk*	*Village/site*	*Cultural assemblage*
		Erenduvar	Mesolithic
Bastar	Jagdalpur		
-do-'	-do--do	Gadia	Mesolithic
-do--d	--do--d	Ghat Dhanora	Mesolithic
o-	o--do--	Hatidara	Mesolithic
-do--d	do-	Hirlagura	Mesolithic
o-		Ichapur	Mesolithic
-do-	-do- ,-do- '	Jagdalpur (Bodhghat colony)	Mesolithic
-do-	-do-	Jamavada	Mesolithic
-do-	-do-	Jartarai	Mesolithic
-do-	-do-	Jatam	Mesolithic
-do-	-do-	Jhar Umargaon	Middle Palaeolithic and Mesolithic
-do-	-do-	Jhitkaguda	Mesolithic
-do-	-do-	Kachnar	Mesolithic
-do-	-do-	Kalipur	Mesolithic and neolithic
-do-	-do-	Kangoli	Mesolithic
-do-	-do-	Karingi	Mesolithic
-do-	-do-	Karmari	Mesolithic
-do-	-do-	Karpawand	Mesolithic
-do-	-do-	Kasturi	Mesolithic
-do-	-do-	Kesarpal	Mesolithic
-do-	-do-	Khotpadar	Middle Palaeolithic and Mesolithic
-do-	-do-	Kinjolipal	Mesolithic
-do-	-do-	Kaoli	Mesolithic
-do-	-do-	Kopaguda	Middle Palaeolithic and Mesolithic
-do-	-do-	Korenga	Mesolithic
-do-	-do-	Korpal	Mesolithic
-do-	-do-	Kosthaguda	Mesolithic
-do-	-do-	Kudalgam	Mesolithic
-do-	-do-	Kumhrawand I	Mesolithic
-do-	-do-	Kumhrawand II	Mesolithic
-do-	-do-	Kumli	Middle Palaeolithic and Mesolithic
-do-	-do-	Kundalur	Mesolithic
-do-	-do-	Madevaguda	Mesolithic
-do-	-do-	Madhota	Mesolithic
-do-	-do-	Maganpur	Mesolithic
-do-	-do-	Majjiguda	Middle Palaeolithic and Mesolithic
-do-	-do-	Malgam	Middle Palaeolithic and Mesolithic
-do-	-do-	Mangrapal	Mesolithic
-do-	-do-	Maoli	Mesolithic
-do-	-do-	Mardum	Mesolithic
-do-	-do-	Muli	Mesolithic
-do-	-do-	Mundapal	Middle Palaeolithic and Mesolithic
-do-	-do-	Nagarnar	Mesolithic
-do-	-do-	Nakhaguda	Mesolithic
-do -		Nalpa	Mesolithic
-do-		nayanar	Mesolithic

District	*Taluk*	*Village/site*	*Cultural assemblage*
Batsar	Jagdalpur	Pahurbel	Mesolithic
»do-	-do-	Paikpal	Mesolithic
-do-	-do-	Pali	Mesolithic
-do-	■do-	Palua	Mesolithic
-do-	-do-	Pambala	Mesolithic
-do-	-do-	Parpa	Mesolithic and neolithic
-do-	-do-	Pharasgam	Mesolithic
-do-	-do-	Piplawand	Mesolithic
-do-	-do-	Rajnagar	Middle Palaeolithic and Mesolithic
-do-	-do-	Rajpur	Mesolithic
-do-	-do-	Retawand	Mesolithic
*do-	-do-	Sargipal	Mesolithic
-do-	-do-	Semalnar	Mesolithic
-do-	-do-	Sindbahar	Mesolithic
-do-	-do-	Singenpur I	Mesolithic
-do-	-do-	Singenptur II	Mesolithic
-do-	-do-	Siviniguda	Mesolithic
-do-	-do-	Sonarpal	Mesolithic
-do-	-do-	Sorgaon	Mesolithic
-do-	-do-	Tadkapal	Mesolithic
-do-	-do-	Tarapur	Mesolithic
-do-	-do-	Timasguda	Mesolithic
-do-	-do-	Tirtam	Mesolithic
-do-	-do-	Tomakoni	Mesolithic
-do-	-do-	Tutideoda	Mesolithic and neolithic
-do-	-do-	Udaipal	Mesolithic
-do-	-do-	Umergaon	Mesolithic
-do-	-do-	Upanpal	Mesolithic
-do-	Kondagaon	Eranbal	Middle Palaeolithic and Mesolithic
-do-	-do-'	Joba	Middle Palaeolithic and Mesolithic
-do-	-do-	Konera	Mesolithic
-do-	-do-	Makri	Mesolithic
-do-	-do-	Mole	Middle Palaeolithic and Mesolithic

Kumari Z. M. Cooper of the Department of Archaeology, Poona University, under the guidance of Dr V. N. Misra, carried out exploration in an area of 72 sq km around the Chitrakot Falls in the above District. In all forty-five surface Mesolithic factory sites were discovered along both the banks of the river Indravati, about 5 km upstream and 6 km down-stream of the Falls. Sites were also noticed along the streams, 4-5 km away from the river. Some of the noteworthy features about these sites are as follows.

The industry consists mostly of waste material like flakes, chips and cores, with very few finished artefacts. The raw materials used are quartz and chert, and less commonly quartzite.

The material occurs in clusters in the depression formed in the sandstone rock. This is typical of the sites that are located along the edges of the plain, on either side of the river, over-looking the gorge, and the. seven sites that are situated along the eastern bank of the stream

Bija Kasa, as well as of the four sites located near the reservoir about 5 km to the south-west of the waterfall. On the sites situated away from the gorge, and along the river banks, upstream of the waterfall, the material is fairly evenly scattered over the rocky surface.

All the sites are located very close to or adjoining the present-day habitations of the local population which include the Kurak fishermen and other Maria/Muria tribal groups.

On some of the sites located along the edge of the gorge, the material extends right up to the point where the sides of the gorge plunge steeply down to the river.

The sites around the waterfall vary from 5000 to 20000 square m in area, while the sites located along the edge of the plain, overlooking the gorge, and along the river banks upstream of the waterfall, range from 10 square m to 4400 square m. The sites along the streams like the Kapari and the Bija Kasa which drain the Indravati plain, to the north of the river, measure a few square m to about 2000 square m. The sizes of the sites seem to correspond with the ecological potentialities of their locations.

While the distances between the sites along the streams vary from a few metres to about 200 m, those along the river are widely spaced, 25 m to 2 km being the average distance between them.

Some of the factory sites found in this area are located one or more kilometres away from the sources of raw material.

No sites were discovered more than a kilometre away from the perennial sources of water.

The two sources of raw material in this area are, sand-bars where pebbles of quartz, chert and quartzite are available, and the river banks about 2 km upstream of the waterfall where conglomerates containing silica family minerals such as angular to sub-angular pebbles of quartz are found, while there are large nodules of chert interbedded with shale on. the northern bank of the river, to the east of the stream Kapari, near Temra village, about 3-4 km upstream of the waterfall.

However, the focal point of the study was the Chitrakot Falls on either side of which exist the largest surface sites in the area. These sites vary in size from 4800 to 20,000 sq m. Of these, Site no. CRT 19 was selected for systematic study. It is 18,000 sq m in area and is located along the edge of the plain, on the northern side of the waterfall. The entire site was mapped on the basis of 5 m grids and it was divided into six sections, each having sub-sections of 900 sq m. Sampling was done clusterwise since most of the material occurs in the form of clusters. In this manner 25-30 per cent of the clusters from each section had been sampled.

Eight other sites, varying in size from 170 to 4800 sq m, and located at various points in the study area, were also investigated on similar lines, for the purpose of supplementing the data collected on the Tirtha site.

The Kuruks, who are the Maria fishing caste of the Indravati valley, still practice primitive methods of fishing. In order to find out usefulness of present-day subsistence patterns in the area, for obtaining a better understanding of the archaeological sites, a detailed study was made of the various fishing methods practised at present, as well as of the type of equipment and baits used, including the species and sizes of fish that are obtained from the pool. The wild plant foods that are collected by the local population were also studied. In addition, observation of the methods of collecting edible insects, of hunting flying squirrels, field-rats, hares and some species of birds, was most enlightening.

A very brief investigation of some of the streams that flow down the northern face of the Magar escarpment, which is located about 16 km south of Chitrakot, revealed a few large flakes made on fine-grained quartzite. A few small rock-shelters were also discovered along the summit of the escarpment, facing the village Michanar.

Due to the sparseness of human settlements in this area and the lack of prominent physical features, it has not been possible to assign names to individual sites. Hence the sites have been

grouped into clusters which have been named after the nearest village or physical feature. The list of sites is given below.

Name of village/site	*Abbreviation*	*No. of localities*
Chitrakot	CRT	23
Ratinga	RTG	7
Reservoir	RVR	7
Temra	TMR	8

44. EXPLORATION IN DISTRICT BHIND.—The Central Circle of the Survey, in the course of exploration brought to light: a site yielding Painted Grey and Northern Black Polished Wares, black-and-red ware, terracotta plaque of the Gupta times at Misa; remains of a Pratihara temple with doorway-intact at Boreswar; sculptures belonging to the Pratihara and the Kachchapaghata times at Baderi, Jor-Brahmena, Kanawar and Kanchogar; and *sati*-pillars bearing inscriptions of fourteenth-fifteenth century A.D. at Levan, Sakraya and Sapar.

45. EXPLORATION IN DISTRICT DAMOH.—The Department of Ancient Indian History, Culture and Archaeology, University of Sagar, during the course of exploration, noticed sculptures belonging to the Chandella and Kalachuri periods at Abhana, Badgawan, Bahmori, Balakot, Bandakpur, Chhaparat, Chhitra-Kheda, Damoh, Dumar, Khajuri, Khameria, Khera, Kodal, Marhia, Sarkhodi, Sihora, Tendukhera and Tharraka.

46. EXPLORATION IN DISTRICT DEWAS.—In continuation of the last year's {*1978-79,* p. 27) work, Shri M. Umamaheswara Rao of the Central Circle of the Survey, explored, eighty villages on the banks of the river Choti Kalisind. Among the sites explored, Bangar village has a huge mound yielding chalcolithic black-and-red ware, medieval sculptures, and *sati*-pillars. List of villages/sites with antiquarian remains is given below.

District	*Taluk*	*Village/site*	*Cultural assemblage*
Dewas	Dewas	Agrod	Medieval sculptures
-do-	-do-	Bangar	Chalcolithic black-and-red ware
-do-	-do-	Borkheri	Medieval sculptures
-do-	-do-	Budhani	Medieval sculptures and *sati*-pillars
-do-	-do-	Chirawad	Medieval sculptures
-do-	-do-	Dungaria	*sati*-pillar and medieval sculptures
-do-	-do-	Gorkheri	Medieval sculptures
-do-	-do-	Ilaskheri	Monolithic miniature shrine and medieval sculptures
-do-	-do-	Jamgod	Medieval sculptural and architectural fragments
-do-	-do-	Kankund	Muslim period red ware
-do-	-do	Lasuria	Medieval sculptures
-do-	-do-	Lohana	Medieval sculptures
-do-	-do-	Mangrola	Medieval sculptures
-do-	-do-	Merkheri	Medieval sculptures
-do-	-do-	Nadir	*sati*-pillars
-do-	-do-	Naranjipura	Medieval sculptures
-do-	-do-	Nauda	*Sati*-pillars and medieval sculptures

District	*Taluk*	*Village/site*	*Cultural assemblage*
Dewas	Dewas	Neuri	Medieval sculptures
-do-	-do-	Niklang	Remains of a Paramara temple
-clo-	-do-	Nimboda	Medieval sculptures
-do-	-do-	Nipania	Medieval sculptures
-do-	-do-	Patraoda	,*Sati*--pillars and medieval sculptures
-do-	-do-	Pempura	,*Sati*--pillars and a stepped-well
-do-	-do-	Polai	Medieval sculptures
-do-	-do-	Rajpura*	Medieval mound
-do-	-do-	Ralamandal	*Sati*-pillars
-do-	-do-	Rujaria	Medieval sculptures
-do-	-do-	Sarola	Medieval sculptures
-do-	-do-	Sia	Medieval sculptures
-do-	-do-	Silakheri	Medieval sculptures
-do-	-do-	Sindni	Medieval sculptures
-do-	-do-	Singaoda	i Medieval sculptures
-do-	-do-	Tonk Kalan	*Sati-pillars* and medieval sculptures
-do-	-do-	Upri	*Sati*-pillar and medieval sculptures
-do-	-do-	Vijaipur	*Sati*-pillar, medieval sculptures and a stray neolith
-do-	-do-	Virgod*	Medieval sculptures
-do-	-do-	Yasodgarh	*Sati*-pillars and medieval sculptures

Note: asterisk mark indicates t/ie name not mentioned in the topo-sheet.

The Department of Ancient Indian History, Culture and Archaeology, University of Sagar, in the course of exploration in the District brought to light sites at Mundaheda and Nalesar yielding pottery belonging to the Kayatha and Malwa cultures and also noticed sculptures belonging to Paramara period in about thirty villages in the District.

47. EXPLORATION IN DISTRICT MANDASOR.—The Excavations Branch of the Department of Archaeology, Government of Madhya Pradesh, and Dr V. S. Wakankar of the Vikram University Ujjain, discovered a few chalcolithic sites at Baghor and Mawala in Sitamau Taluk and noticed wall paintings of Rajput and Maratha periods in sixteen buildings at Mandasor.

Kumari Bharati Joshi, Registering Officer, Ujjain, discovered a damaged water reservoir (19.5 x 17.0 m) and sculptures belonging to Paramara period at Modi in Neemuch Taluk.

48. EXPLORATION IN DISTRICT MORENA.—Shri Krishnapal Singh Bhadoria of the Central Circle of the Survey, in the course of his exploration, discovered the following sites of archaeological interest.

District	*Taluk*	*Villagejsite*	*Cultural assemblage*
Morena	Arnbah	Aisaha	Medieval fragmentary Brahmanical sculptures, .*sati*-pillar and ruined *garhi* of Tomar Rajput
-do-	-do-	Arron	Gupta terracotta plaque (Agni ?) and medieval Brahmanical sculptures

District	Taluk	Village/site	Cultural assemblage
Morena	Ambah .	Bawadipura	Medieval Brahmanical sculptures and *baoli*
-do-	-do-	Bhakroli	Medieval fragmentary Brahmanical sculptures and *sati*-pillar
-do-	-do-	Bhirosa	Medieval fragmentary Brahmanical sculptures and late medieval *sati*-pillar
-do-	-do-	Bhonpura	Medieval Brahmanical and Jaina sculptures
-do-	-do-	Budhara	Medieval fragmentary Brahmanical sculptures and *sati*-pillar
-do-	-do-	Chapak	Medieval fragmentary Brahmanical sculptures and *sati*-pillar or memorial pillar
-do-	-do-	Dharmgarh	Late medieval *sati-pillar*
-do-	-do-	Dondri	Medieval fragmentary Brahmanical sculptures
-do-	-do-	Garhi Durgadas	Medieval fragmentary Brahmanical and Jaina sculptures
-do-	-do-	Ikhera	Historical pottery, terracotta beads, medieval fragmentary Brahmanical sculptures and memorial pillars
-dc~	-do-	Jotai	Medieval fragmentary sculptures
-do-	-do-	Kamtari	Medieval pottery
-do-	-do	Kandkauli*	Historical pottery
-do-	-do-	Katclhakapura*	Medieval Brahmanical sculptures
-do-	-do-	Kicoola	Medieval Brahmanical sculptures and *sali*-pillars
-do-	-do-	Kirranch	Medieval fragmentary Brahmanical sculptures
-do-	-do-	Kontharkalan	Medieval fragmentary Brahmanical sculptures temple remains, architectural fragments and *sati-pillar*
-do-	-do-	Kudona	Medieval fragmentary Brahmanical sculptures and memorial pillar
-do-	-do-	Kukthari	Medieval fragmentary Brahmanical sculptures, architectural fragments and *sati*-pillar
-do-	-do-	Kuretha	Medieval fragmentary Brahmanical sculptures and architectural fragments
-do-	-do-	Mahua	Medieval fragmentary Brahmanical scupltures and architectural pieces
-do-	Ambah	Mai*	Medieval Brahmanical sculptures and architectural fragments
-do-	-do-	Mehdora	Medieval Brahmanical sculptures, architectural fragments and late medieval sati-pillar
-do-	-do-	Nunhera	Gupta terracotta plaques

District	*Taluk*	*Village/site*	*Cultural assemblage*
Morena	Ambah	Orethe	Medieval fragmentary Brahmanical sculptures and late medieval *sati*-pillar
-do-	-do-	Purawaskalan	Medieval Brahmanical and Jaina sculpture and late medieval *sati*-pillar
-do-	-do-	Rached	Medieval fragmentary Brahmanical sculptures
-do-	-do-	Ritwari	Medieval fragmentary Brahmanical sculptures
-do-	-do-	Ruariya*	Historical pottery
-do-	-do-	Rupehati	Medieval fragmentary Brahmanical sculptures, remains of a temple and *sati*-pillar
			Late medieval *sati*-pillar
			Medieval fragmentary Brahmanical sculptures
			Medieval fragmentary Brahmanical sculptures
			Mounds with Kayatha chalcolithic pottery, Painted Grey Ware, historical pottery, remains of medieval temples, fragmentary sculptures, architectural fragments, etc.
			Medieval Brahmanical sculptures and architectural fragments
			Medieval Brahmanical sculptures and architectural fragments
			Mound with Kayatha chalcolithic pottery, Painted Grey Ware and historical pottery

Among the above sites, Sihoniya and Tutwas on the rivers Asan and Kunwari respectively are important as they have yielded Kayatha ware.

49. EXPLORATION IN DISTRICT RAIPUR.—In continuation of the last year's {*1978-79,* p. 98) work, Shri O. P.Mishra of the Department of Archaeology, Government of Madhya Pradesh, resumed exploration in the Mahanadi river valley and discovered a few sculptures of warriors, *sati*-pillars and *mithuna-figures* datable to *circa* fourteenth-fifteenth century A.D. at Barpader in Dhamtri Taluk. Besides, a terracotta bull belonging to early medieval period was picked up from the site at Suabahara which yielded sherds of red, grey and black-slipped wares.

50. EXPLORATION IN DISTRICT RAISEN.—Shri Narayan Vyas of the Central Circle of the Survey, in the course of his exploration, discovered the following sites of archaeological interest.

The Department of Ancient Indian History, Culture and Archaeology, University of Sagar, in the course of exploration discovered a large number of Lower and Middle Palaeolithic and Mesolithic sites, notable being at Agaria, Ambari, Anari, Baheria, Bahmori, Balarkho, Balori, Bankheri, Bari, Bari-khurd, Berkhari, Bhagwanpura, Chapna, Chapra, Chhola,

District	*Taluk*	*Village/site*	*Cultural assemblage*
Raisen	Raisen	Amkhera*	
-do-	-do-		

Lower Palaeolithic, historical, medieval sculptures and stone structures

Lower Palaeolithic and medieval sculpture Lower Palaeolithic, painted rock-shelters and medieval sculptures
Lower Palaeolithic, Mesolithic and historical, medieval sculptures, stone objects and structures
Lower Palaeolithic, Mesolithic, painted rock-shelters and stone structures Lower Palaeolithic
Lower Palaeolithic and historical stone structures Lower Palaeolithic
Lower Palaeolithic, historical and medieval sculptures and *sati-pilhr* • Lower Palaeolithic, medieval sculptures and stone structures
Lower Palaeolithic, medieval sculptures and stone structures
Lower Palaeolithic, Mesolithic and painted rock-shelters
Lower Palaeolithic, historical ^nd medieval sculptures
Lower Palaeolithic and stone structures Lower Palaeolithic, medieval sculptures and

Lower Palaeolithic, Mesolithic, medieval sculptures and jaft'-pillars
Lower Palaeolithic, medieval sculptures and

Medieval sculptures
Lower Palaeolithic and medieval sculptures
Lower Palaeolithic, Mesolithic, painted rock-shelters and stone structures
Lower Palaeolithic and medieval sculptures
Lower Palaeolithic, historical stone and structures
Lower Palaeolithic, Mesolithic, painted rock-shelters, and an inscription in Shell characters in a rock-shelter
Lower Palaeolithic
Lower Palaeolithic, Mesolithic and painted

District	Taluk	Village l site	Cultural assemblage
Raisen	Raisen	Ninod	Lower Palaeolithic, rock engraving, medieval sculptures, palace stone structure, tank and wells
-do-	-do-	Patandeo	Lower Palaeolithic, Mesolithic, historical,-ruined stupas (?), stone structures and and medieval sculptures
-do-	-do-	Pura*	Historical
-do-	-do-	Pipliachandkhan	Medieval sculptures and *sati*-pillar
-do-	-do-	Sagona*	Lower Palaeolithic, Mesolithic, painted rock-shelters, ruined Paramara temple, sculptures and stone structures
-do-	-do-	Saladarpur	Lower Palaeolithic
-do-	-do-	Sarar	Historical, medieval, sculptures tank, stone structures and well

Note .■ asterisk mark denotes the name not mentioned in the topo -sheets

Dargwan, Diwanganj, Eran, etc., rock-shelters bearing paintings at Chat-Pipalia, Diwanganj, Hissan Khera, Khabai, Kulahria, Mahuakhera, Muskarabad, Nagori, Narkhera, Ratanpur (Budha) and Satkunda; ancient sites yielding black-and-red, red and black wares at Fatehpur, Khera, Marmata and Sarar; stupa and remains of *viharas* belonging to the second-first century B.C., at Bidpur and Patandeo; sculptures belonging to Sunga period, notable being a bell-capital, *yaksha* and railing bearing inscription in Brahmi characters, at Bera; sculpture of Balarama, belonging to *circa* fourth century A.D. at Mehagaon; and medieval sculptures at Bhagwanpura colony.

51. EXPLORATION IN DISTRICT REWA.—In continuation of the last year's *{1978-79,* p. 98) work, Shri S. S. Gupta, assisted by Sarvashri J. S. Dubey and P. T. Dhoptey of the Prehistory Branch of the Survey, under the guidance of Dr K. D. Banerjee, resumed exploration around Hanumana for the rock-shelters with paintings with a view to establishing a chronological sequence in the paintings which are normally assigned to the prehistoric period. Majority of painted rock-shelters, among the thirty more discovered in the vicinity of Hanumana, were found to contain writings in Devanagari script in red along with a few animal and human figures. Noteworthy is the depiction of a wild boar in light red superimposing an inscription in Devanagai-i script in dark-red colour, which helps in assigning the date of at least one group of paintings in rock-shelters. Further, microlithic tools were found in a few shelters.

Shri A. K. Sharma of the above-mentioned Branch of the Survey, noticed nearly one hundred megalithic dolmenoid cist burials situated in many clusters and making north-south orientation at Baghaiya (pl. XII A).

52. EXPLORATION IN DISTRICTS REWA AND SIDHI.—The Department of Ancient History, Culture and Archaeology, University of Allahabad, under the direction of Professor G. R. Sharma, assisted by Sarvashri V. D. Misra, D. Mandal, B. B. Misra, J. N. Pal, Ranjit Singh, D. K. Shukla, Kamalkar Thakur, Prakash Sinha and M. G. Gupta carried out geologico-archaeological investigations in the mid-Son valley. Professor J. Desmond Clark of Berkeley University, California, U.S.A., assisted by B. Clark, Professor Martin Williams, Keith Royes, Jonathan

Mark Kenoyer, Robert Bhumenschine, Carole Eve Sursman, Jo Ann Gutin and Steven Andrew Brandit, also joined this expedition as invitee scholars. An extensive area (covering over 70 km) from Bhaghor in the east to Chorhat in the west bound by Kaimur in the north and Son in the south, was investigated, and it was observed that the sediments of the Son valley could be divisible into four formations.

I. Sihawal formation	type section being left bank of the river Son, 1 km east of Sihawal
II. Patpara formation	type section being near Patpara an archaeological site type
III A. Bhaghor formation (lower member) III	section being nullah on the southern side of Bhaghor
B. Bhaghor formation (upper member) IV.	type section being nullah on the southern side of Bhaghor
Khetauhi formation	type section being right side of the Son, 1 km upstream of its confluence with the river Rehi.

I. Sihawal formation, with a maximum preserved thickness of 1.5 m, rests on the eroded bed-rock of the Son valley. Formation comprises angular to rounded clasts of sandstone, shale and quartzite, ranging in size from sand-sized grains to boulders up to 50 cm in diameter ^ set in matrix of clay. Occasionally the boulder clays are overlain by nearly 50 cm of mottled brown clay loam which contains sporadic clasts of sandstone, shale and quarzite.

II. Patpara formation, with maximum exposed thickness of 10 m, unconformably overlies the Sihawal formation, and comprises massive to crude, sub-horizontally laminated, medium to very coarse sand, granules and pebbles. Major detrital components are quartz and clasts of sandstone, shale and quartzite, set in matrix of clay. It is dark-reddish in colour. The formation is partly cemented by iron, rolled and rounded clasts of agate, chalcedony and microcrystalline silicious rocks. In places the Patpara formation is overlain by 1 m thick dark red/brown mottled indurated clay. Commonly it is erosionally truncated by the overlying Bhaghor formation.

III. Bhaghor formation with maximum exposure of 20 m, unconformably rests on the Patpara formation. It has two distinctive phases: A, coarse member and B, fine member. The coarse member contains sheets of unconsolidated cross-bedded sands, ranging from 5 to 80 cm in thickness. It is composed of quartzite, shale, quartz, chalcedony, agate and chert ranging in size from medium to very coarse sand granules and pebbles. In places, this sub-phase is capped by a thin interval of inter-bedded sand and silt. The fine member has a maximum thickness of 10 m and rests conformably on the earlier formation. The component members of this formation are silt and clay. Irregular calcium carbonate occurs throughout the deposit though heavily concentrated towards the top.

IV. Khetauhi formation, forming an aggradational terrace, approximately 10 m above the present river-level has a thickness of about 10 m. The formation consists of interbedded silts and clay with occasional traces of fine to very fine sand.

The above formation presents a vertical record of the climatic fluctuations through which the Son valley has undergone right from the mid-Pleistocene up to the early Holocene. Nature and content of Sihawal formation clearly indicate that during this formation climate was semi-arid to sub-humid. While the gravels were formed in semi-arid climatic condition, the overlying clay was deposited in sub-humid condition. The Patpara formation appears to have come into being under high flow water regime. The gravels of this formation are predominantly sub-rounded quartz. Widespread leaching and precipitation of iron and manganese implies sub-humid conditions during and after the initial phases of widespread valley aggradation. The Bhaghor formation with its lower and upper members indicates a change from bed-load to

suspended-load regime which are tentatively attributed to the cold, dry terminal Pleistocene and warm, wet early Holocene respectively. The youngest, the Khetauhi formation, indicates a return to sub-humid condition following an interval of hill-slope instability and river incision.

The above mentioned geological units are implementiferous. The Lower Palaeolithic tools have been found from the Sihawal formation while the Lower Palaeolithic and Middle Palaeolithic artefacts have been obtained in the Patpara formation. Since the Lower Palaeolithic tools contained in this formation are fresh, it is ruled out that they have been dislodged from the older formation, and got embedded in the Patpara formation. It is evident that the Lower Palaeolithic industry continued at the time of Patpara formation. The Bhaghor formation has yielded rolled tools of the Middle Palaeolithic industry, suggesting that the formation is younger than the industry contained in it. The upper unit of the formation contains fresh Upper Palaeolithic artefacts. The Khetauhi formation also yielded some microlithic tools.

Further, area between the Kaimur in the north and Kundheri nullah in the south was also geologically investigated. The formations in the ascending order are: a shaly limestone bed-rock; capped by brown clay of 90 cm thickness; over which a fan-gravel formation; overlain by brown clay deposit of 3-2 m; capped by 50 cm thick deposit of fan-gravel; in turn overlain by dark-greyish brown clay deposit of 30 cm thickness; and capped by brown loam of lm thickness.

The Son formations and the formations lying between the Kaimur and the Kundheri nullah have been tentatively correlated. Fan-gravels over the 90 cm thick deposit of brown clay is correlated to the Bhaghor formation (coarse member) with rolled Middle Palaeolithic tools. The Bhaghor formation (fine member) corresponds to 3-2 m deposit of brown clay, whereas fan-gravels of 50 cm thickness and dark greyish brown clay deposit of 30 cm could be correlated with post-Bhaghor formation of the Son and Khetauhi formation respectively.

Further, during an intensive exploration in Districts Rewa and Sidhi, particularly in the Son valley and Kaimur range, brought to light Middle Palaeolithic sites at Baghamaria, Hatwa, Kamarji, Lakora-ki-Pahari and Sanda in District Sidhi and Ghaghwa in District Rewa. The artefacts are fashioned mainly on chert. The assemblage includes points, scrapers, discoids, core and flakes.

Twenty-five Upper Palaeolithic sites were noticed in District Sidhi. Among them five sites, Baghamaria, Kamarji, Lakora-ki-Pahari, Lolani and Sanda, are located in the Son valley-while sites at Baghor, Baghera, Barda, Barigawa, Bhelki, Dhumma, Ganaur, Ganjari, Lahia and Pachokhar are situated on the southern slope of the Kaimur.

Of the Epi-palaeolithic sites discovered, the one at Karribaccha in the revenue village of Jarkul in District Rewa is the most extensive. The artefacts, parallel-sided blades, blunted blades, notched blades, scrapers, cores, flakes and debitage, mostly made on chert and chalcedony, are quite fresh.

On the southern slope of the Kaimur, eleven sites and two in the Son valley, belonging to Mesolithic period were discovered. Of these sites, mention may be made of Baghamaria, Baghor, Baghera, Barigawa, Barua, Bhelki, Ganjari, Jokighat, Kerai, Lahia and Pachokhar. However, the site at Sardaman in District Rewa is the most extensive one covering an area of 1000 square m. The tools collected include parallel-sided blades, blunted blades, serrated blades, scrapers, besides cores, flakes and debitage. The artefacts are made on chert and chalcedony and are in fresh condition.

Besides, three groups of painted rock-shelters yielding plenty of microlithic tools were noticed at Bhawarahawa, Ghagharia and Mahuaria, all on the southern flank of the Kaimur. The paintings in ochre, blood-red and white pigments depict dancing human figures, hunting scenes, deer, stags, rhinoceros, porcupine, rabbits and elephants.

From an area locally known as Lalnabia in the revenue limit of Medhauli in District Sidhi, cord-impressed and rusticated wares, ring-stones and basin-shaped querns, which can be ascribed to neolithic culture, were found.

Among the megalithic sites, habitation as well as burial, discovered in District Rewa, located on the slopes of the Kaimur on the either sides of the river Adwa, the promising ones are Adaipur, Bahera-dabar, Biradai, Hardi, Harrai, Jogibir, Nakwar and Sardaman. The types of burials represented include: (i) cist within cairn, (ii) dolmenoid cist, (iii) Kotia-type cist, and (iv) Cairn-circle (pl. XII B). The diameter of the cairns range from 15.45 to 4.25 m, while the height varies from 1.35 m to 40 cm. The maximum and minimum length of cists are 2-25 and 1.05 m respectively, while their width varies from 1.45 m to 60 cm. The cists, which dominate, had capstones. However, the port-hole was not observed.

The habitational sites are usually located adjacent to the burials to the north of the river. The ceramic evidence puts them into two groups, chalcolithic and iron age. From the chalco-lithic sites red, black-and-red and black-slipped wares represented by such types as bowls, pedestalled bowls, straight-sided dishes, vases, etc., which are comparable to the ones from Kakoria in District Varanasi and Koldihwa in District Allahabad. The iron age habitational sites have yielded Black-and-red ware, red and grey wares represented by basins, bowls of various shapes including pedestalled ones and with flat base and dishes. The pottery compares very well with the ceramics of Kotia and other sites in the Belan valley.

53. EXPLORATION IN DISTRICT SAGAR.—Shri Vijay Singh, research scholar in the Depart ment of Archaeology, University of Poona, during the course of his exploration, discovered the following rock-shelters.

Amori, 5 km. west of Sagar on the Sagar-Bina road, has three rock-shelters with paintings. The paintings include human figures, *svastika* design, flowers and peacock in red. Four painted rock-shelters were noticed at the foot of a hillock, about 2 km north-east of Bedwara, which is again 38 km south-east of Sagar, The paintings depict horse-riders, men with swords and shields and animals like deer and bull, all in red. At Chitauli, 12 km north-west of Sagar, one large shelter at the foot of a hill has paintings of battle scenes showing men, equipped with swords and shields, fighting, the human figures being in black, white and red. Karta, situated 32 km southeast of Sagar on the Sagar-Rahli road, has eight painted rock-shelters on both the banks of the river Kaith. The paintings include animals like nilgai *(Boselaphus tragocamelus),* monkey, spotted deer, peacock and human figures and soldiers with swords and shields, all painted in red and white. Eight painted rock-shelters were found at a hillock near Ramgarha, 28 km south-east of Sagar, while Rangir, 36 km south-east of Sagar, has two painted rock-shelters on the left bank of the river Dehar. The paintings show scenes of horse-riders, elephant-riders and soldiers fighting with swords and shields in white and red.

54. EXCAVATION AT BHAGHOR, DISTRICT SIDHI.—The Department of Ancient History, Culture and Archaeology, University of Allahabad, under the direction of Professor G. R. Sharma, carried out excavation, as a part of geologico-archaeological investigations in the mid-Son valley, at two sites, one (Bhaghor I) at a distance of about 4 km north-east of Marhaoli and the other (Bhaghor II) at Medhauli on the left bank of the Kudheri nullah.

Excavation at Bhaghor I revealed seven layers, of which the layer 1, 10 cm in thickness, essentially part of the underlying yellow loam., is disturbed, whereas layer 1 A is compact and undisturbed yellowish brown loam and 20 to 25 cm in thickness. Layer 2 is light grey or greyish brown clay deposit of 17 to 20 cm thickness. Layer 3 composed of dark grey clay varying in thickness from 5 to 7 cm. Layer 4 is a deposit (40 to 45 cm thick) of dark grey clay containing nodules of iron and manganese and rolled pebbles. Layer 5, varying in thickness from 5 to 10 cm, is a shaly gravel deposit with small-sized pebbles. Layer 6 with an average thickness of

15 cm is yellowish grey mottled clay deposit containing manganese and iron nodules. Layers 7 is gravelly in character and 10 cm in average thickness.

The artefacts found in layers 1, 1A and 2 were found displaced from their original context. However, layer 3 was a.genuine artefact-bearing horizon and the tools were in primary context. The underlying layers 4, 5, 6 and 7 were devoid of any artefacts. The tools recovered show affinity with the Upper Palaeolithic industry and could be classified into three broad groups—retouched, modified and unmodified.

The retouched artefacts include blunted back blade, flake, half denticulate and half back blade, triangle, scraper, micro-burin, tranchet, trapeze and borer. Among the two hundred and twenty-eight retouched ones, one hundred and seven are fully or moderately complete and the rest are fragments and unfinished tools. Modified specimens are flake and blade with or without cortex, flake and blade fragments, edge-damaged blade, chunk and nodules. Unmodified category, consisting of seventeen thousand five hundred and seventy-seven specimens, of which fifteen thousand seven hundred and sixty-five are fragments and chunks, and the rest are fully or moderately complete, represented by flake, flake fragment, blade, blade-fragment, core rejuvenation, core and chunk, all with or without cortex, core-cobble reduction and prismatic cores.

Among the other finds obtained from the excavation, mention may be made of bored-stone, hammerstones, lower part ground stones, fire-crack sandstone fragments, sharpener and pigment.

The artefacts are fashioned on cherty material. The majority of cores, debitage and finished tools indicate that before chert was put for industrial purposes, it had to undergo through the process of fire-treatment.

Excavation at Bhaghor II, a Mesolithic site revealed six layers: layer 1 of 14-cm thick deposit of yellow loam; layer 2 A of gravelly clay with 10 cm thick deposit; layer 2 B of smaller gravel mixed with clay and of 17 cm thickness; layer 3, 28 cm in thickness, composed of schist gravel mixed with clay; layer 4, represented by black Clay deposit of 51 cm; layer 5, 55 cm in thickness, of yellow loam; and layer 6 of sandy brown loam deposit of 25 cm. Layers 1 to 3 yielded geometric microliths unassociated with pottery.

Excavation revealed plans of as many as seven circular/oval huts, of which three showed traces of post-holes on the periphery. Two fully-exposed huts measured 1.95 and 1.50 m in diameter. The floors were found littered with large number of stone pieces, anvils, hammerstone with battered surfaces, querns, mullers, rubberstones and microlithic tools. A few hoof impressions of deer were also noticed in one of the huts.

The microlithic tool assemblage recovered in the excavation is characterized by: unmodified waste comprising flakes (with or without cortex), blades, core trimming flake, core, flake/blade fragments, chunks, pebbles/nodules; modified pieces consisting of flake, blade, flake/blade fragments, chunk and pressure-flaked modification; and retouched ones or finished artefacts comprising backed blade, truncated tools, denticulate, borer, scrapers, retouched/ modified flake/blade, lunate, triangle (both scalene and isocelos types), trapeze and nosed pieces. Artefacts are fashioned on fine grained stone like chalcedony, agate, etc., but cherty material is also represented. The tools are generally fresh and small, the rolled ones being in very limited number. Excavation also yielded hammerstones, ground stones, sandstone discs, pigments, ring stones, anvils and anvil-cum-hammerstone with battered marks.

55. EXCAVATION AT GHAGHARIA, DISTRICT SIDHI.—The Department of Ancient History, Culture and Archaeology, University of Allahabad, under the direction of Professor G. R. Sharma, carried out excavation, as a part of geologico-archaeological investigations in the mid-Son valley, at a rock-shelter located on the Kaimur range, 12 km east-northeast of Sihawal on the river Son, containing paintings in ochre, blood-red and white pigments, with a view to

ascertaining the nature and character of the deposit. Excavation revealed occupational deposit of 53 cm divisible into two phases belonging to the Mesolithic culture,

Phase I is characterized by the occurrence of microlithic tools like modified flakes, blades, micro-burin, cores, core-trimming flakes, flake-blade fragments, chunks and finished tools like backed blades, truncated tools, borer, points, scrapers, lunates, retouched and modified flakes/ blades, triangles (scalene and isocelos), trapeze, etc. The phase is conspicuous by the absence of pottery.

The tools are bigger as compared to those from the succeeding phase and generally made on blade. The lithic industry is also more prolific than the one from the succeeding phase. The artefacts, found in primary context, are made mostly on chert but fine-grained rocks like chalcedony and agate are also used. The tools were found patinated but not much rolled.

Phase II is marked by the occurrence of pottery along with microlithic tools. The ceramic industry is represented by red ware, ill-fired *khakhi* or brownish grey ware and corded and burnished red wares. Types encountered are mainly bowl of medium and small size. The microlithic tool repertoire includes modified flakes, blades, micro-burins, cores, core-trimming flakes, flake/blade fragments, chunks, modified specimens like flake/blades, flake/blade fragments, edge damaged and finished tools, truncated tools, denticulates, pointed/backed tools, borer, scrapers, burins, retouched flake/blade along with geometric tools like triangles (scalene and isocelos) and trapeze. A few examples of crested ridge tools made on blades and considerably smaller in size were also met with. Most of the tools are made on chert. However, the frequency of other fine-grained rocks like chalcedony, agate, carnelian, etc., increases considerably. The tools are less patinated as compared to those from the preceding phase. Other objects recovered include stone beads, ground stones, miscellaneous ground stones, pigments and bone fragments of animals and birds.

Layer	*Description*	*Correlation*	*Artefacts*
	Light brown surface sand	Corresponds to Bhaghor formation	Implementiferous (rolled Middle Palaeolithic tools)
2	Loose red sandy gravel		
3	Mottled grey-brown clay sand	—	Sterile
4	Red ferrugenous gravel, some imbrication, shale, chert, sandstone, quartziteformations	Corresponds to Patpara	
5-	Mottled grey/yellow clay	Mottled clay	, Sterile
6	Shale pebble gravel	—	
7	Mottled grey/yellow clay and some gravel	—	
8	Mottled grey/yellow clay and fine gravel	Sihawal formation	Implementiferous (Lower Palaeolithic)
9	Rounded, angular shale gravel with quartzite	—	—
10	Clay with some gravel	—	—
1	Ferrugenous sand and fine gravel	—	—
12	Fragments, shale gravel		—
13	Angular rounded gravel		—
14	Basal gravel Bed-rock		-----

The rock-shelter appears to have been disturbed at a later date as is evident from the discovery of a few sherds of Kotia Ware and iron slags from the topmost layer.

56. EXCAVATION AT NAKJHAR-KHURD, DISTRICT SIDHI.—The Department of Ancient History, Culture and Archaeology, University of Allahabad, under the direction of Professor G. R. Sharma, as a part of geologico-archaeological investigations in the mid-Son valley, carried out excavation at Nakjhar-Khurd, 1.6 km south-west of Sihawal-2, another excavated site, on the right bank of the river Son.

Excavation revealed fourteen layers divisible into three main geological units: Bhaghor, Patpara and Sihawal formations. Following are the description of layers, their geological correlation and the nature of the artefacts obtained from each geological unit.

Artefacts were found distributed in all the major geological formations. Of the fifty-eight collected artefacts, twenty-one were from the gravel unit of the Sihawal formation, thirty-four from the basal unit of the Patpara formation and rest were from the Bhaghor formation. Handaxes cleavers, flakes and cores were distributed throughout the gravel unit of the Sihawal formation, and are in fresh condition. However, the mottled clay, which is the upper member of the Sihawal formation, did not yield any tools. But the basal unit of the Patpara formation yielded majority of the collected tools. The tools obtained are handaxes, cleavers, modified flakes, chunks, scrapers and cores, besides some artefacts of the Middle Palaeolithic industry, all in fresh condition. The Bhaghor formation yielded scrapers and modified flakes of the Middle Palaeolithic industry, which, however, are highly abraded suggesting that these are redeposited ones.

57. EXCAVATION AT PATPARA, DISTRICT SIDHI.—The Department of Ancient History, Culture and Archaeology, University of Allahabad, under the direction of Professor G. R. Sharma, carried out excavation at Patpara, a Palaeolithic site on the northern slope of a ridge of the Vidhyas running along the river Son, 2 km east of the village Patpara, as a part of geologico-archaeological investigations in the mid-Son valley.

Excavation in the area termed Patpara I, western part of the site, revealed four layers described below.

Layer	*Description*	*Thickness*	*Correlation with geological section*
1	Surface sediments		
2	Red brown clay	2.37 m	Corresponds to unit 4 of the Patpara formation
3	Dark red brown clay with manganese	50 cm	Corresponds to unit 3 of the Patpara formation
4	Dark red brown clay	36 cm	Corresponds to unit 2 of the Patpara formation

Most of the artefacts, belonging to Lower and Middle Palaeolithic industries, were found lying on the surface.

Excavation at Patpara II, eastern part of the site and 500 m east of the above-mentioned area, revealed a channel-fill, consisting largely of loose reddish brown clay, with a maximum width of more than 2 m and minimum width of 35 cm. Besides, two geological formations, i.e.,

Patpara formation of 4.85 cm thick and Sihawal formation of 1.33 m thick, were also exposed. However, most of the artefacts were collected from the channel-fill. In all one hundred and thirty-two artefacts were collected and the tools are predominantly made on quartz as well as chert. The assemblage;, consisting of finished tools and debitage, fresh as well as slightly abraded, belongs to the Middle Palaeolithic industry, In the excavation were exposed either Sihawal formation or the lower level and middle levels of the Patpara formation. The tools from the lower level show transitional stage between the Lower and Middle Palaeolithic periods. But the tools from the middle level belong to the Middle Palaeolithic industry. The tools collected do not belong to primary context.

58. EXCAVATION AT SIHAWAL, DISTRICT SIDHI.—The Department of Ancient History, Culture and Archaeology, University of Allahabad, conducted excavation at Sihawal on the left bank of the river Son, as a part of geologico-archaeological investigations in the mid-Son valley, under the direction of Professor G. R. Sharma.

Excavation revealed three levels of deposition of which the earliest, Level III, could be divisible into two phases, A and B. Level I represented the lower member of the Patpara formation. The deposit, 1 m in thickness, red in. colour was composed of coarse sand. Level II was brown clay deposit of 75 cm. The upper 20-cm thick deposit was sandy clay, while the rest was full of calcium carbonate concretions corresponding to the upper member of the Sihawal formation. Level III A ranging from 20 to 30 cm in thickness formed the upper layer of the boulder clay which was found weathered. Level III B is boulder clay deposit containing boulders mixed with clay. There is complete mixture of rolled and angular boulders grading from heavily-abraded sandstone to fresh-looking angular flint and quartzite. The deposit is cemented with calcium carbonate and there was considerable iron/manganese precipitation. The thickness of the deposit varied from 22 to 70 cm. Levels III A and B put together formed the lower member of the Sihawal formation.

Level I, the sandy layer in its upper 20 to 30 cm deposit, yielded twenty artefacts which, were found moderately abraded by water action. However, one of them, an Upper Palaeolithic blade, was fresh. This mixture of fresh-looking and abraded tools is probably due to disturbance. Level II, the mottled brown clay, was non-implementiferous but the Level III A, the weathered upper surface of the boulder clay, showed concentration of the artefacts. The concentration is confined only to 20-30 cm. The artefacts, one hundred and fourteen in number, range from highly abraded to fresh. Level III B yielded only four artefacts which range from moderately abraded to fresh. Most of the artefacts, including handaxes, cleavers, choppers, flake-tools, modified flakes, flakes, flake fragments, chunks, cores and core fragments, belonging to Lower Palaeolithic industry, are made on fine grained sandstone, quartzite or chert.

59. EXPLORATION IN DISTRICT UJJAIN.—The Excavation Branch of the Department of Archaeology and Museums, Government of Madhya Pradesh and Dr V. S. Wakankar of the Vikram University, discovered Stone Age sites at Dangwada, Gorawada and Sijavata. The tools belonging to the Lower and Upper Palaeolithic industries were collected from the sections of the tributary nullahs of the river Chambal.

Dr V. S. Wakankar picked up a few fragments of ostrich egg-shells from a sandy field in between Dangwada and Kapileshwara. At Nagda and Rajota also similar evidence was noticed.

Sites belonging to chalcolithic period were noticed at Kheda-Narayana, Maswadia and Runija in Baranagar Taluk and at Gudar and Morkhera in Depalpura Taluk.

Remains of three temples belonging to the Paramara period but subsequently repaired during the Maratha times, were discovered at Depalpura, Gautampura (Depalpura Taluk), Dangwada and Gajinikhedi (Barnagar Taluk). The presence of fragmentary panel of *sapta-matrikas* at Gajinikhedi and the discovery of gold coins of Chandra Gupta II and Samudra Gupta from

Runija, within a distance of two kilometres from each other, indicate the influence of the Gupta rule in the region.

60. EXCAVATION AT DANGWADA, DISTRICT UJJAIN.—In continuation of last year's *(1978-79,* pp. 70-71) work, the Department of Archaeology and Museums, Government of Madhya Pradesh and the Vikram University, Ujjain, under the direction of Shri M. D. Khare and Dr V. S. Wakankar assisted by Sarvashri R. R. Singh, O. P. Mishra, M. K. Maheshwari, Giriraja Kumar and Dr J. N. Dube, resumed excavation with the view to confirming the cultural sequence established last year and to expose larger occupational area belonging to the chalco-lithic culture.

Excavation in the heart of the mound revealed a 5.45-m thick deposit belonging to Period I which could be divisible into Sub-periods I A and I B represented respectively by Ahar and Malwa chalcolithic cultures which had 1.10 and 4.35-m thick deposit.

Period I A is distinguished by the presence of plain and painted black-and-red, painted black-on-red (pl. XIII A) and incised grey wares, besides lustrous red ware. The white painted designs on the black-and-red ware include simple bands, straight and wavy lines, strokes and dots. The painting rubs off very easily. Painted black-and-red ware predominates over the plain one. The types represented are deep bowls and dishes, while the designs present in the black-on-red ware are simple bands around the body, small vertical strokes on the exterior of the rim and occasionally on the interior and hatched diamonds. Plain red ware vases in most of the cases have corrugated shoulders. Besides, this Sub-period is represented by microlithic tools, mostly parallel-sided blades and cores, copper, stone pestles, a ball and terracotta bulls. Altogether twelve bull figurines of various types including archaic forms have been collected. Two urn-burials encountered in this Sub-period yielded two urns of burnished red ware with corrugated shoulders and applique design. These pots contained a few burnt bones, possibly of human. A few microlithic tools were also picked up from the vicinity of the burials. No structural remains, except a flooring made of small pebbles, was encountered.

Period I B, represented by Malwa chalcolithic culture in 4.3-m deposit, could be divisible into four phases.

Period I B (i) is characterized by the occurrence of typical pottery (pl. XIII B) of the Malwa chalcolithic culture along with a limited quantity of the Ahar culture, besides microlithic tools and stone objects like querns, pestles, balls, hammerstones. No structural remains were noticed.

Period I B (ii) is marked by maximum number of finds and structural remains. The ceramic industry is almost the same as in the preceding phase, except that the Ahar types are very few in number and the painted designs are more elaborate and that the animal designs make their first appearance. Most notable among the structural remains belongs to a shrine (1.2x0.7 m) built of bricks and duly plastered with mud. Although no objects were found in the shrine itself, a few conical objects, probably symbolic representation of Mother goddess, and a few miniature lamps were found lying in the vicinity. A rectangular sacrificial pit, measuring 1.95 x 1.50 m, was encountered at a distance of 1.15 m towards south of the shrine. The sides of the pit were probably plastered and it contained charcoal and burnt logs. Another structural complex, possibly of religious significance, had a small chamber containing square and hollow terracotta potstands, jars and other pottery types, and another adjacent room with an opening flanked by pillars surmounted by an arch, and yet another larger rectangular room marked by post-holes. The complex yielded painted and plain pottery, charcoal and charred grains, terracotta bulls of various types, steatite bead, etc.

Period I B (iii) is noted for an elliptical structure standing on wooden posts and a kitchen complex containing, besides a few vases, one terracotta laddle with perforated handle and painted on its exterior. Another kitchen-complex, with four storage jars containing charred

grains, was also encountered. Noteworthy finds of this phase include: copper chisel, terracotta mould for copper axes, bone tools including a chisel, terracotta ear-lobs, balls, marbles; and stone balls and marbles. There is a higher percentage and variety of painted designs on the pottery.

Period I B (iv) is conspicuous by the absence of bull design on the pottery, the fabric of which, in general, is poorer. The painted designs are confined to simple bands, wavy lines and occasional hill symbol. Among the structures encountered, mention may be made of a dump-like deposit which could be part of rampart or bastion, and a rectangular house, measuring 5 x 6 m, standing on wooden posts. This period seems to have come to an end due to a large-scale conflagration. Further, in spite of the fact that there is an indication of flood on the southwestern side of the mound, there is evidence for continuation of occupation throughout the mound.

Period II is divisible into two phases, A and B.

Period II A (Pre-Mauryan) shows continuation of ceramic traditions of the preceding Malwa culture and introduction of early historical pottery in large percentage. Iron, too, makes its appearance. Other antiquities include shell bangles, terracotta beads and a few ear-lobes. No structural remains were noticed.

Period II B (Mauryan) is distinguished from the preceding Sub-period by the presence of punch-marked coins, Northern Black Polished Ware, iron and copper objects in abundance, ring-wells, etc.

Period III (Sunga-Kushana) is marked by the occurrence of remains of a sacrificial-pit *(yagna-kunda),* measuring 4 x 3.85 m, yielding a terracotta seal (pl. XIV A) bearing a legend *Damodaryajayi* in Brahmi characters of second century B.C., copper bell, ear-lobe of crystal, and charred grains. The bowls kept by the side of it also had charred grains. An elliptical structure (11 x 5 m) with foundation of unhewn stones was also exposed. This structure probably had a rectangular enclosure built of small stones and platforms by its side, the remains of which have been encountered. Part of this elliptical structure, which was possibly a temple, had tiled roof. The objects associated with this complex are huge terracotta bulls," a small bowl of shell provided with a thin copper handle and two terracotta seals bearing legends *Siri rayogna agni tap as day as* and *Jivamatangas* in Brahmi characters of second century B.C. The important finds of this period include ivory objects, silver coated bangles, ear-lobe of lead, a small gold leaf, handle of a vase in Kaoline decorated with a beautiful figure of *yaksha,* beads of terracotta and semiprecious stones and a large number of punch-marked coins.

Period IV (Kshatrapa-Gupta) yielded three seals bearing legends *Bhattarakpad, Vedisas* and *Sri maharajas pra.......* in Brahmi characters of the Gupta times, a large number of terracotta figurines (pl. XIV B) representing both human and animal, decorated bangles of shell and terracotta, a terracotta mould , beads of terracotta and a charriot. A flooring made up of pebbles and stones and a foundation wall built of alternating layers of black clay and stone with a thin layer of sand in between were the structural remains of the Period.

Period V (Paramara) marked by the presence of early medieval pottery in which coarse grey ware dominates over red ware. A few structural remains built of reused bricks were also encountered.

MAHARASHTRA

61. EXPLORATION IN DISTRICT AHMEDNAGAR.—Shri L. S. Rao of the South-Western Circle of the Survey, during the course of his exploration, noticed stone sculptures representing Vishnu, Ganesha, Brahma, Siva-Parvati, *kirti-mukha* and a bull, belonging to the Yadava period, at Gondegaon, Jafrabad and Undingaon.

62. EXPLORATION IN DISTRICT AMARAVATI,—Professor Ajay Mitra Shastri and Dr Chandrashekhar Gupta of the Department of Ancient History, Culture and Archaeology, Nagpur University, in the course of exploration noticed habitational mounds covering large area at Kholapur. The mounds, in fact, extend right from the modern village to the temple of Kholesvara, evidently connected with the Yadava general of the same name. The village itself is named after him as is known from one of the Ambe Jogai inscriptions of the time of Singhana. The mounds yielded variety of pottery represented by black, red and coarse red wares, a fragmentary terracotta leg of human figure with red slip resembling red-polished ware and beads of terracotta as well as semiprecious stones like carnelian and crystal. A coin of Indo-Sassanian type and a few medieval coins were also reported to have been found from the mounds, besides a terracotta bull.

Salbardi on the borders of Maharashtra and Madhya Pradesh, in the Morshi Taluk, yielded microlithic tools, Hemadpanti temples and early rock-cut caves. The microlithic tools include blades and lunates. The two Hemadpanti temples are in dilapidated condition. One of them had been repaired by a follower of the Mahanubhava sect, but the repairs have damaged the original beauty of the monument. There are in all three rock-cut caves. Of them, the biggest and the only complete cave is at present occupied by the adherents of the Mahanubhava sect who have not only applied cement plaster to its wall but have installed five deities of their own sect. However, a close examination revealed that the caves were originally excavated by the Hinayana Buddhists and were later occupied by the Mahayanists. The plan of the cave has an open courtyard in front of a verandah, the side-walls of which are pierced by a cell each. The back wall of the verandah is relieved by an entrance to a large (approximately double the area of the verandah) hall which has two cells in the side walls and a small *garbha-griha* in the centre of the back wall. This *garbha-griha* appears to be a late addition. It contains a figure of Buddha seated on a lotus seat, the stalk of which is supported by two persons with serpent hoods *(naga-purushas).* The face of the Buddha is damaged. The Bodhisattvas Padmapani and Vajrapani are shown standing holding their respective emblems by the side of the Buddha. The remaining two caves are incomplete with only a portion of the hall hewn out.

63. EXPLORATION IN DISTRICT AURANGABAD.—Dr M. S. Mate of the Deccan College Post graduate and Research Institute, Pune, in the course of his intensive archaeological investigation into the structural ruins of the fort and the township of Daulatabad, identified a stone bund and a consequent reservoir in the north-western corner of the fortified area. Other structural remains were plotted in the northern half revealing two streets running from north to south.

64. EXCAVATION AT NAGRA, DISTRICT BHANDARA.—The Department of Archaeology and Museums, Government of Maharashtra, under the direction of Dr A. P. Jamkhedkar assisted by Shri P. M. Muley, conducted excavation at Nagra (pl. XV A), 6 km from Gondia on the way to Balaghat, and unearthed remains of a brick-built temple datable to the Vakataka times. The plinth, which is the only extant part of the temple, is 28.75 x 26.30 m, with an extant height of 3 m. The outline of this rectangular plinth oriented east-west is broken by alternative projections and recesses, which are respectively 2.15 and 1.45 m wide. The vertical face of the plinth consists of different mouldings at the base with niches on top. The niches on the projections rest on railing patterns and those in recesses have pilasters in their frame (pl. XV B). Another structure, a brick-built cistern with traces of a stone-cut channel spilling water to the cistern, was also traced. A human-faced *makara-pranala* was also unearthed. However, most important find of the excavation is that of a crystal seal with the legend *Narayano* in Brahmi characters, datable to the Vakataka times (pl. XVI A).

65. EXPLORATION IN DISTRICT CHANDRAPUR.—Professor R. V. Joshi, Drs S. N, Rajaguru, R. S. Papua, K. Paddayya and M. D. Kajale of the Deccan College Post-graduate and Research Institute, Pune, explored part of the Wardha valley and discovered a late Acheulian site on the northern shore of Tadoba lake, a famous wild life sanctuary, Todoba is a natural lake formed in a shallow depression in a sandstone plateau at an elevation of about 350 m. The lake receives its waters from the drainage of the river Erai, a tributary of the Wardha. The area around the lake is covered by a moist deciduous forest, dominated by bamboos and teak trees. In this forest wild animals such as tiger, panther, nilgai, two or three species of deer, gaur *(Bibos gaurus)* and wild dog are to be found. Crocodiles are common in the lake.

Acheulian tools were found in the hill slope rubble lying close to the north-northwestern shore of the lake. The rubble is about 1 m thick and consists of blocks and sub-rounded boulders (9-10 cm across) of sandstone and is moderately cemented by ferruginous material. Tools were found throughout the depth of the deposit and are more or less fresh and made on quartzitic sandstone. The assemblage consists of a few bifaces, discoids and flakes.

The rubble grades into closely packed pisolithic lateritic gravel (2 m thick) which rests on bed-rock sandstone.

A Middle Palaeolithic flake-tool assemblage comprising scrapers, flakes and cores of quartzitic sandstone was also found on the surface of laterite, 7 km south of Tadoba lake. This locality lies very close to the road leading out of the Tadoba lake. Interestingly enough, some massive lateritic blocks were observed at this locality; it is possible that these blocks were taken advantage of by the Stone Age groups for raising shelters.

Perhaps this is the first Acheulian site discovered in the Deccan in the vicinity of a natural lake having a very favourable environment.

The South-Western Circle of the Survey, in the course of exploration noticed Lower and Middle Palaeolithic tools in mint condition in a stratified deposit at Bhamragadh on the river Pranahita. Further, at Kahali, Masala Tukum and Warora were noticed more than two hundred megalithic stone-circles, besides Black-and-red Ware having megalithic affinity at the former two sites and black-slipped ware at Warora.

Shri G. K. Mane of the above-mentioned institution collected microlithic tools including parallel-and single-sided blades and points at Jivanpura, and noticed temples built in Hemad-panti style dedicated to Siva, Ganesa and Annapura at Gadbori in Brahmapuri Taluk.

66. EXPLORATION IN DISTRICT DHULIA.—Shri V. L. Dharurkar of the South-Western Circle of the Survey, in the course of his exploration, collected microlithic tools from the sites at Achhi, Akkadese, Arave, Dondaicha, Paste, Pimpri and Varul, all in Sindhkheda Taluk.

67. EXCAVATION AT NAIKUND, DISTRICT NAGPUR.—The Department of Archaeology, Deccan College Post-graduate and Research Institute, Pune, and the Department of Archaeo logy and Museums, Government of Maharashtra, headed respectively by Professor S. B. Deo and Dr A. P. Jamkhedkar, carried out excavation in the habitation area and the iron-smelting factory area.One stone-circle, about 100 m to the north-east of the habitation area, was also exposed.

Excavation in the habitation area revealed 2.9-m thick habitation deposit belonging to single culture i.e, megalithic, giving the typical pottery represented by Black-and-red, micaceous red, plain red, painted black-on-red and burnished black wares. The types encountered in Black-and-red Ware are hourglass-like stands, bowls with tapering sides and conical base, lids with painted knobs and sometimes with bird motifs and having graffiti. The micaceous red ware has mostly flat-based doughs and vessels with round bottom and funnel-shaped mouth. The black-on-red ware was available only in fragmentary sherds bearing mostly black lines, bands and hatched diamonds. The shapes in this ware appear to be mostly small-sized globular

pots and the type met with in burnished black ware are the same as those of Black-and-red Ware though the former has a large number of sherds with graffiti, the patterns of which are the same as normally found on the megalithic pottery of south India.

The most important evidence unearthed in this season is the remains of circular huts with circular wooden posts at the periphery. The huts had a diameter of 6 m and that of the posts 30 cm. Remains of wood and charcoal were also recovered. The floor of the hut was made up of rammed clay plastered with thick lime coat. Over the floor as also in other deposits were found artefacts of iron such as axes with cross-ring fasteners, hoes, nail-parers with cabled body, arrowheads, adzes, lamps with long straight handles, and a polished stone axe made of quartzite. Charred grains like rice, wheat, black and green gram were also found on the floor and also recovered by floatation method.

About 50 m to the east of the habitation were found a reasonably fair amount of iron slag fragments, large-sized crucibles and remains of a semicircular furnace, the sides of which were glossy because of fused clay. This is the first evidence, so far available, of iron-smelting furnace of the megalithic culture in Maharashtra.

Megalith 4 with 13 m diameter, was found identical, after fully excavating it this season, in construction, with the stone-circles excavated earlier. Pottery recovered in profusion include Black-and-red, micaceous red and black-burnished wares along with a few sherds of painted black-on-red ware. The burial yielded iron objects such as axes with cross-ring fasteners, nail parers with cabled body and daggers, besides remains of a horse with ornaments made of sheet copper and the remains of a lower jaw of an adult, Thus the Naikund excavation has further established, culturally and chronologically, the correspondance between the megalithic stone-circles, megalithic habitation and iron-smelting.

68. EXCAVATION AT INAMGAON, DISTRICT PUNE.—In continuation of last year's *{1978-79,* pp. 52-53) work, Drs M. K. Dhavalikar and Z. D. Ansari of the Deccan College Post-graduate and Research Institute, Pune, assisted by Drs M. D. Kajale, P. K. Thomas, Miss Shubha Khandekar, Sarvashri V. S. Shinde and Y. S. Rasar, resumed excavation, limiting the work to the early levels of the Malwa period (Period I : dated to *circa* sixteen hundred to fourteen hundred B.C.) with a view to studying the material culture of the first settlers of Inamgaon.

Excavation revealed that the earliest settlers are people belonging to the Malwa culture with very developed traits, and they, while occupying the site for the first time, levelled the uneven top surface of the black cotton soil by spreading a thick deposit, as thick as 15 cm at places, of yellow silt quarried from the river bank. The earliest houses exposed are large rectangular structures generally with a single room but one house-complex (no. 94-99) had six rooms. The structures were thatched one with wattle-and-daub walls. The floors were made of rammed yellow silt and black clay. They were periodically repaired and relaid. House no. 101 had at least a dozen floor levels. The edges of the floors were raised along the dwarf wall with a view to preventing rain water entering into the house. The houses were generally provided with well-laid courtyards. Almost all the houses, except no. 87, were oriented southeast-northwest. This orientation continued till the end of the Period II, belonging to Early Jorwe, dated to *circa* fourteen hundred to one thousand B.C.

A distinguishing feature of the earliest houses is their fire-pits which are of two types. One of these is a large oval pit having a flat stone in the centre plastered with mud obviously for supporting the cooking vessel. It may have been used for roasting hunted animals as it is usually to be found outside the house in the courtyard. The other type, which is more interesting, was usually found inside the house but very rarely outside as well. It had an oblong shallow pit with a clay disc not in the centre but nearer the curved end whereas the opposite end was meant for inserting the fire-wood. The most curious feature of this type of fire-pit was that it had mud wall

around the clay disc. The wall was probably 12 to 15 cm in height and was obviously provided for preventing the fire being extinguished by wind.

Almost every house had a large deep pit silo which is betoken of the prosperity of the occupants. Generally the silos were located in the courtyard but they were also found inside the house as in no. 96. They were found plastered with lime which might have served as insecticide. The grain was also stored in huge flat-bottomed storage jars which were supported by a set of four flat stones as in House no. 93. Two silos, associated with House no, 87, looked rather unfinished because even the pick-marks could be seen and were not plastered with lime or mud. Therefore it is possible that they were used for keeping poultry or birds as is done today in the villages of Maharashtra.

Another characteristic feature of the Malwa culture, as was noticed earlier and confirmed this year, was the burials. Only child burials have been discovered whereas adult burials are conspicuously absent. The children were buried in two globular jars placed mouth-to-mouth horizontally inside a pit dug in the floor of the house. Of the two jars, sometimes one was of the Malwa variety; the grey ware urns with globular body and flared rim were also common. The burial goods kept inside the pit consisted of vessels of grey ware and painted Malwa ware.

The early settlers cultivated barley *(Hordeum vulgare),* millets, *ragi,* lentil and peas. The people also subsisted on hunting and fishing. Among the animal bones recovered, a good number are those of deer as well as domesticated sheep/goat, cattle, buffalo, etc. They were slaughtered sometimes for food.

The pottery is represented by distinct wares such as the Malwa, coarse red and grey and handmade storage jars. In the Malwa ware the spouted jar is as common as in the Jorwe ware. Its occurrence is significant because it is absent at Malwa sites in central India. Other important antiquities of the Period include: specialized blade/flake industry of chalcedony; tools and beads of copper points made of deer bone; terracotta objects such as Mother goddess figurines with or without head, usually unbaked, a male figurine probably representing a divinity; and a good number of beads of semiprecious stones.

69. EXCAVATION AT PANHALE KAZI, DISTRICT RATNAGIRI.—In continuation of previous work, the South-Western Circle of the Survey, under the direction of Shri R. G. Pandeya, assisted by Sarvashri L. S. Rao and G. L. Gaikwad, resumed excavation at Panhale Kazi, and exposed a dressed masonry structure having a *garbha-griha* and *mukha-mandapa* in north-south orientation. A slab measuring 60 x 55 cm was found provided at the entrance of the *garbha-griha.* Entire floor of the *garbha-griha* was probably laid with two slabs, of which one is missing and the intact one showed half-cut socket meant for receiving the pedestal of Siva-*linga. Makara-pranala* is provided on the east.

A rectangular (5.25 x 3.30 m) structure near the Cave 16 and plinth portion (4.50 x 4.05m) of a temple near Cave 25 were also exposed. An interesting feature of this plinth was that the back portion of this was cut into the rock. The flooring of the temple was provided with dressed slabs. Further, nearly 100 m away towards east of Siva temple, a platform-like structure chiselled out of the rock up to a height of 75 cm was also exposed. From this platform slabs with lozenge decoration were also collected.

MEGHALAYA

70. EXPLORATION IN DISTRICT GARO HILLS.—In continuation of the last year's *(1978-79,* pp. 30-31) field-work, Dr Dilip Kumar Medhi of Arya Vidyapeeth College, Gauhati, resumed exploration and discovered two neolithic sites, one at Gawak Abri, 1.0 km west of Selbalgiri, 25-28 m above the modern bed-level of a tributary of the river Selbal. The tools collected from a field, presently used for Jhum cultivation, include finished and unfinished artefacts. Another

site near Selbalgiri and south-west of the confluence of the rivers Selbal and Rongram also yielded finished and unfinished tools belonging to the neolithic times,

71. EXPLORATION IN DISTRICT KHASI HILLS.—Dr H. C. Sharma of the Department of of Anthropology, Gauhati University, in the course of his exploration, discovered a neolithic site on the left bank of the river Wah Umium near Barapani, yielding tools such as axes, adzes, points, scrapers and a good number of waste flakes and chips (pls. XVI B and XVII A). The artefacts, found on the surface, were exposed in the course of ploughing the surface alluvial soil deposited on the laterite. The raw material used for manufacturing the tools include phyllite and shale which belong to the Shillong series and are locally available. This is the first site to be discovered in the District.

Dr Dilip Kumar Medhi of Arya Vidyapeeth College, Gauhati, Dr S. N. Rao of the Department of History, North-eastern Hill University, Shillong and Shri Zahid Husain of the Anthropological Survey of India, Shillong, in the course of their exploration, also noticed the above-mentioned site and collected two finished celts, five unfinished celts, two broken unfinished celts, eleven blades, eleven scrapers, thirteen waste flakes, one core and two microliths.

ORISSA

72. EXCAVATION AT BANKADAGARH, DISTRICT PURI.—Shri R. K. Rath of the Department of Archaeology, Government of Orissa, under the guidance of the Superintendent, excavated a site at Bankadagarh. Excavation revealed a temple-complex datable to the post-Gupta period [*circa* sixth century A.D.). The temple-complex is *panchayatana* on plan. Besides, a large number of sculptures were also recovered. Among them, mention may be made of two-handed Karttikeya, Ganesa, Vishnu, a panel depicting hunting scene, a panel depicting animals and eight inscribed slabs. The site was probably the capital of the Sailodbhava dynasty.

PUNJAB

73. EXPLORATION IN DISTRICT LUDHIANA.—Shri J. M. Thapar of the North-western Circle of the Survey, in the course of his exploration, noticed the following sites of archaeological interest.

District	*Villagejsite*	*Cultural assemblage*
Ludhiana	Baddowal (Buddhi Rudi)	Mound (500 X 400 m) with 3 m deposit-yielding late Harappan, Kushana, Rang-mahal and medieval pottery and a Siva temple
-do--do	Chupki	Late medieval temple
-	Dhandra	Mound (300 X 200 m) with 2-m deposit yielding late Harappan, Kushana, Rang-mahal and medieval pottery
-do-	Hussanpur	Mound (450 X 400 m) with 3 m deposit yielding late Harappan, grey ware, Kushana, Rangmahal and medieval pottery

District	*Village/site*	*Cultural assemblage*
-do-	Jurahan	Mound (200 X 200 m) with 2-m deposit yielding grey ware, Rangmahal and medieval pottery
-do-	Khatra-Chuharmi	Mound (200 X 200 m) yielding Kushana. and medieval pottery
-do-	Kohara	Two mounds (400 X 400 and 200 X 200 m) with 2-m deposit yielding late Harappan black-slipped ware, Kushana and medieval pottery
-do-	Kulliewal	Mound (100 x 50 m) with 2-m deposit yielding medieval pottery
-do-	Lalton Kalan	Fort (A.D. 1730) and late medieval temple
-do-	Machhian Kalan	Late medieval mosque
-do-	Malakpur	Two mounds (one completely disturbed) yielding late Harappan, Kushana, Rang-mahal and medieval pottery
do-	Mansuran	Mound (250 X 150 m) with 2-m deposit yielding late Harappan pottery, grey ware, black-slipped ware, Kushana and medieval pottery
-do-	Nanakpur Jagera	Mound (150 X 100 m) with 1-5-m deposit yielding Harappan, late Harappan, Kushana and medieval pottery
-do-	Nurpurbet	Late medieval mosque
-do-	Pamal	Mound (200 X 200 m) with 2-m deposit yielding Pre-Harappan, Harappan, Kushana Rangmahal and medieval pottery
-do-	Phullanwal	Two mounds (250 X 200 and 150 X 50 m) with 3.5-and 1.5-m deposit respectively yielding medieval pottery
-do-	Pohir	Late medieval Siva temple
-do-	Prithipur	Mound yielding late Harappan, Kushana, Rangmahal and medieval pottery
-do-	Raipurbet	Mound (500 X 500 m) with 3.5-m deposit yielding Kushana pottery
-do-	Salempur	Mound (200 X 200 m) with 2-5-m deposit yielding Kushana and medieval pottery
-do-	Selkhiana	Mound (200 X 200 m) with 1-5-m deposit yielding medieval pottery
-do-	Talwara	Two mounds (400 X 250 and 300 X 200 m) with 5-m deposit yielding Harappan and late Harappan pottery and Painted Grey and grey wares.

RAJASTHAN

74. EXPLORATION IN DISTRICTS ALWAR, BANSWARA, BHARATPUR, BHILWARA, CHITTAUR-GARH, DUNGARPUR, JAIPUR, JHUNJHUNU,SAWAI MADHOPUR, SIKAR AND UDAIPUR.-—Sarvashri Vijay Kumar, Shyam Nandan, Harish Chandra Mishra, K. L. Meena, Krishna Lal and Jodha Ram, under the direction of Shri R. C, Agrawala of the Department of Archaeology and Museums, Government of Rajasthan, conducted exploration in the above-mentioned Districts and brought to light the following sites of archaeological interest.

District	*Village/site*	*Nearby river*	*Cultural assemblage*
Alwar	Bavariya	Kharnali	Sturdy pottery and microlithic tools
Banswara	Lohariya .	Mahi	Historical
-do-	Thikariya	Mahi	Historical
Bharatpur	Kair	Gambhiri	Ochre-coloured pottery
-do-	Khan Kheri (near Bayana)	Gambhiri	Ochre-coloured pottery
-do-	Nithar	Gambhiri	Ochre-coloured pottery
Bhilwara	Angucha	Manasi	Northern Black Polished Ware
-do-	Hurda	Khari	Black-and-red ware
-do-	Jana Amarpura	Banas	Black-and-red ware
-do-	Mali Khera	Banas	Microlithic tools
-do-	Nagari Sthala	Kothari	Microlithic tools
-do-	Nagariyathal	Banas	Microlithic tools
-do-	Nandrai	Kothari	Microlithic tools
-do-	Tikari Khera	Kothari	Black-and-red ware
Chittaurgarh	Acharya	Shiva nullah	Black-and-red ware
-do-	Choti Sadari (Rajalgarh)	Jakam	Black-and-red ware
-do-	Gomana	Jakam	Black-and-red ware
-do-	Juna Arnodo	Gambhiri	Black-and-red ware
-do-	Juni Ordi	Gambhiri	Black-and-red ware
-do-	Nagari	Gambhiri	Black-and-red ware
-do-	Rawaliya	Mulya nullah	Black-and-red ware
Dungarpur	Amjhara	Donadi	Historical
-do-	Aspur	Som	Black-and-red ware
-do-	Dewal	Donadi	Historical
-do-	Koliya	Som	Black-and-red ware
-do-	Metali	Donadi	Historical
-do-	Upper Godhi	Donadi	Historical
Jaipur	Achrol	Gomati	Ochre-coloured pottery and microlithic tools
-do-	Aniyali	Kasaunti	Ochre-coloured pottery
-do-	Banar	Kasaunti	Ochre-coloured pottery, copper ore and working
-do-	Bhanti-ri-Tibri	Kasaunti	Ochre-coloured pottery
-do-	Boochara (Kolyara)	Pandoli	Ochre-coloured pottery
-do-	Garha	Pandoli	Sturdy ware and copper slag

District	*Village/site*	*Nearby river*	*Cultural assemblage*
-do-	Khokhro Khera	Kasaunti	Ochre-coloured pottery
-do-	Monyali Baori	Pandoli	Ochre-coloured pottery
-do-	Oda-ki-Dhani	Kasaunti	Ochre-coloured pottery and copper slag
Jhunjhunu	Jodhpur	Kantali	Ochre-coloured pottery and microlithic tools
-do-	Sunari	Kantali	Black-and-red and Painted Grey Wares
Sawai Madhopur	Kota-Maholi	Panchana	Ochre-coloured pottery
Sikar	Aheerawala	Kantali	Ochre-coloured pottery and copper slag
-do-	Ageri	Kantfi	Ochre-coloured pottery
-do-	Bakhtawar-ki-Dhani	Kasaunti	Ochre-coloured pottery
-do-	Balwara (Jorika Beed)	Kantali	Ochre-coloured pottery and copper
-do-	Banethi	Kasaunti	Ochre-coloured pottery
-do-	Bani-ka-chora	Kantali	Ochre-coloured pottery
^do-	Basedi	Kantali	Ochre-coloured pottery and copper slag
-do-	Bayka	Kantali	Ochre-coloured pottery
-do-	Bhadwadi	Kantali	Ochre-coloured pottery
-do-	Bhita i Gaondi	Kantali	Ochre-coloured pottery and microlithic tools
-do-	■ Bhojpura	Kantali	Ochre-coloured pottery
-do-	Bhoodoli	Kantali (Chandrabhaga)	Ochre-coloured pottery and copper objects
-do-	Bhoodoli (old)	Kantali	Historical
-do-	Bhuralya	Kantali	Ochre-coloured pottery
r -do-	Bihani Pura	Dohan	Ochre-coloured pottery
-do-	Bihar	Dohan	Ochre-coloured pottery, copper implements, slag and working platform
-do-	Burka Khera	Dohan	Ochre-coloured pottery and copper
-do-	Byorka	Kantali	Ochre-coloured pottery and microlithic tools
-do-	Chamrauli	Kasaunti	Ochre-coloured pottery and copper slag
-do-	Chanuhan-ki-DAani	Kantali	Ochre-coloured pottery
-do-	Chiplata	Kantali	Ochre-coloured pottery
-do-	Dabla-ki-Bani	Dohan	Ochre-coloured pottery
-do-	Dehra	Kantali	Ochre-coloured pottery
-do-	Delsar	Kasaunti	Ochre-coloured pottery, copper slag and microlithic tools
-do-	Dhoonwala	Kantali	Ochre-coloured pottery and copper slag
-do-	Dilpura	Kasaunti	Ochre-coloured pottery and copper slag
-db-	Dolyada	Kantali	Ochre-coloured pottery
-do-	Gaonri	Kantali	Ochre-coloured pottery and copper slag
-do-	Gaonri Bandh	Kantali	Ochre-coloured pottery and copper slag
-do-	Ghata	Kantali	Ochre-coloured pottery
-do-	Golyari	Kantali	Ochre-coloured pottery and copper slag
-do-	Hinduka	Kasaunti	Ochre-coloured pottery and microlithic tools

District	*Village/siie*	*Nearby river*	*Cultural assemblage*
Sikar	Jatala	Dohan	Ochre-coloured pottery
-do-	JhulnaTila	Kantali	Ochre-coloured pottery and microlithic tools
-do-	Jugalpura	Kantali	Ochre-coloured pottery and sturdy pottery
-do-	Kanwat	Kantali	Ochre-coloured pottery
-do-	Khadra	Kantali	Pottery and copper slag
-do-	Khalra	Sota	Ochre-coloured pottery and copper slag
-do-	Khera (Balwar)	Kantali	Ganeshwar culture
-do-	Khurdiya	Kasaunti	Ochre-coloured pottery and microlithic tools
-do-	Kishore Pura	Kasaunti	Ochre-coloured pottery and copper slag
-do-	Kulhade-ka-Johad	Kantali	Ochre-coloured pottery
-do-	Kumhareri	Kantali	Ochre-coloured pottery and microlithic tools
-do-	Kuradhan-ki-Doongri	Kantali	Ochre-coloured pottery and copper arrow-head
-do-	Lagna (Balwar)	Kantali	Historical
-do-	Loharwas Sota	Sota	Ochre-coloured pottery, copper slag, and working platform
-do-	Lomor	Kasaunti	Ochre-coloured pottery
-do-	Madrajal	Kantali	Ochre-coloured pottery
-do-	Nala (Baleshwar)		
-do-	Malyali	Kantali	Microlithic tools
-do-	Meeno-ki-Dhani	Kantali	Ochre-coloured pottery and microlithic tools
-do-	Melda '	Kantfi	Ochre-coloured pottery and copper
-do-	Mothuka	Kasaunti	Ochre-coloured pottery
-do-	Mungtor	Kasaunti	Ochre-coloured pottery and copper smelting
-do-	Nayavali	Kantali	Microlithic tools
-do-	Nimodh	Kantali	Ochre-coloured pottery and copper slag
-do-	Nahro-ke-Kothi	Kantali	Ochre-coloured pottery
-do-	Panjadi	Kantali	Ochre-coloured pottery, microlithic tools and copper
-do-	Para Bhitar-ki-Dhani	Kantali	Ochre-coloured pottery and copper slag
-do-	Partheri Kantali	Kantali	Ochre-coloured pottery and microlithic tools
-do-	Poonchlari Dhani	Kantali	Ochre-coloured pottery and copper
-do-	Purana Mothuka	Kasaunti	Ochre-coloured pottery and copper slag
-do-	Pycjara	Kantali	Ochre-coloured pottery and copper slag
-do-	Rajawali Dhani	Kantali	Sturdy ware
-do-	Ransar	Kantali	Sturdy ware
-do-	SooroJ	Kantali	Copper working site
-do-	Tapkeshwar Chavandea	Kantali	Ochre-coloured pottery
-do-	Tariyali	Kantali	Copper slags

District	*Village/site*	*Nearby river*	*Cultural assemblage*
Sikar	Tejawala	Kantali	Ochre-coloured pottery
-do-	Thoi	Kantali	Ochre-coloured pottery and microlithic tools
-do-	Tigri	Dohan,	Ochre-coloured pottery and copper slag
-do-	Todawali Dhani (Sirohi)	Kantali	Sturdy pottery
-do-	Tumat	Kantali	Ochre-coloured pottery and microlithic tools
-do-	Umrawala	Kantali	Ochre-coloured pottery, microlithic tools and copper slag
-do-	Unchibeni	Kantali	Ochre-coloured pottery
Udaipur	Bespur	Gomati	Black-and-red ware
-do-	Depore	Som	Black-and-red ware
-do-	Jhodl	Gomati	Black-and-red ware
-do-	Toraniya	Gomati	Black-and-red ware
-do-	Utpuriya	Gomati	Black-and-red ware

Besides, an exploratory dig at Ganeshwar, Neem-ka-Thana Taluk, District Sikar, yielded copper objects such as arrowheads, rings, bangles, spearheads, rods, blades, spiral-headed pins, fish-hooks, beads, chisels, bells, celts, comparable to the ones from the Indus sites, along with Ochre-coloured pottery.

75. EXPLORATION IN DISTRICTS BARMER, JAISALMER, JALOR, JODHPUR AND NAGAUR.—In continuation of last year's *(1978-79,* pp. 31-33) work in western Rajasthan as part of the multi-disciplinary project 'Early man and his environment in north-west India with special reference to the Luni basin in Rajasthan', Drs V. N. Misra, S. N. Rajaguru and Shri S. C Sahu of the Poona University and Deccan College Postgraduate and Research Institute, Pune, and Dr R. J. Wasson of the Australian National University, Canberra (then Visiting Fellow at Physical Research Laboratory, Ahmadabad) carried out further archaeological and palaeo-climatic investigations. Dr Gurdip Singh of the Australian National University, Canberra, also associated with the work at Didwana and collected lake sediments for pollen analysis.

Major work was concentrated at Didwana but extensive reconnaissance was done in Districts Barmer and Jaisalmer to study the distribution, morphology and weathering horizons of sand dunes, identification of palaeochannels and other Quaternary geomorphic features and location of early settlements and factory sites.

At Didwana a rich early Acheulian site in a primary context was located. Artefacts (pl. XVII B) were found at three localities: (1) Singi Talav, a large shallow depression 1-5 km south-west of Didwana between the Didwana-Jayal road and the Didwana-Marwar Balia railway line; (2) in the dug-out debris of the abandoned Bangad canal near the hamlet of Indola-ki-Dhani, about 1.5 km west of locality 1; and (3) in several lime quarries in the village of Amarpura, 1 km west of Didwana railway station. In all the localities the artefacts occurred in a highly calcareous clay (marl ?) and loam deposit, locally known as *murrud,* and being quarried for making lime for use in construction. In Singi Talav locality though several

artefacts occurred at different depths in a 1-5-m exposed section, they were mainly concentrated on and near the surface *murrud.* In Amarpura quarries they were thinly scattered throughout the exposed 4-nx thick section *murrud.* The clay deposit is disconformably overlain by a weakly pedogenized reddish brown dune sand with a thickness varying from 50 cm in Locality 1 to 1.65 m, in Locality 3. On the surface of these stabilized dunes, microlithic tools were collected near the Salt Dak Bungalow, 2 km south-west of Didwana.

The artefacts are made of Delhi quartzite and vein quartz, available in the Aravalli hills, a few kilometres to the west of the site. They are in an extremely fresh condition, suggesting minimal transport. From the nature of the deposit containing them it can be inferred that the Acheulian man was camping along the shore of a shallow lake occurring in a flood-plain of an ancient stream. The assemblages from all the three localities are fairly homogeneous, and comprise choppers, chopping tools, polyhedrons, handaxes—large as well as diminutive, but mostly crudely made—amorphous cores and flakes. Cleavers and Levallois flakes are conspicuously absent. The industry represents an early stage of Acheulian culture, and is essentially similar to the one excavated from the gravel ridge at Jayal, also in District Nagaur. The archaeological and geomorphic evidence clearly shows considerable human presence in this area in an.environment with more rainfall than at present, and with considerable surface water in the form of a lake or sluggish stream.

On the basis of the preliminary examination of exposed sediments and of wells in the salt lake the Acheulian industry of Didwana can be placed in a relative stratigraphic framework as follows (from top to bottom).

Rock unit	*Cultural content*	*Probable age and environment*
I. Lacustral saline clays and reactivated dunes	Mesolithic occupation on stable dunes	Late Holocene; semi-arid
II. Lacustral fresh water clays	Mesolithic occupations on stable dunes surrounding the lake	Early Holocene; sub-humid
III. Highly saline lacustral clays and e vapor ties	-----	
IV. Dunes (relationship between III & IV is not yet clear)	-----	
Long time gap as suggested by sharp junction with Unit V.		
V. Alluvial clays and gravels	Acheulian occupation on lake Shore (?)	semi-arid to sub-humid

The region under consideration has undergone drastic environmental changes. If the time period involved in such changes is taken into consideration, then the Acheulian industry of Didwana appears to be considerably older than the dune and lake sediments of the Late Pleistocene age.

Reconnaissance survey of dune fields around Didwana, Jodhpur, Jaisalmer and Barmer has shown that the pre-dune phase in this area is represented by well integrated fluvial system. The fluvial fill surfaces provided suitable material for wind action, and major dune fields of western Rajasthan developed some time during the late Pleistocene. Source of dune sand is local and in comparison with dunes in the Sahara desert, those in western Rajasthan are finer in texture. Extensive erosional surfaces on hard rocks are almost free of dunes.

Irregular, linear dune ridges (5 to 10 m high) are common in present semi-arid parts of Rajasthan, while parabolic and hairpin dunes (as high as 60 m) are well developed in arid parts, as at west of Jaisalmer and Barmer. Both falling and climbing types of obstruction dunes are locally well developed where hills obstruct the sand bringing westerly to south-westerly winds. These dunes are observed in semi-arid as well as arid parts. Good scruby vegetation cover and presence of human settlements on dunes and of roads and railway lines on and through the dunes show that the dune field of western Rajasthan is fairly stable. The stable dunes are brownish to reddish brown in colour and show moderate weathering and contain amorphous soft carbonate concretions at a depth varying from 50cm to 3 m below the surface. Yellow or yellowish brown dunes with carbonate root casts occur throughout the area where anthropogenic factors such as grazing and cutting of trees and grass have disturbed the stable surface of brownish dunes.

Major dune field of western Rajasthan is pre-Mesolithic and post-Acheulian in age. A few Carbon-14 dates on carbonate concretions from Shergarh tri-junction point near Bhoja-ka-Bas village and the occurrence of a core dune with hard carbonate concretions below the brownish dune in the railway cutting section at Didwana suggest that the aeolian activity in western Rajasthan is likely to be older than 40,000 years B.P. However, majority of the exposed stable dunes are younger than 40,000 years B.P. and are of late Quaternary age only.

The preliminary studies show that there is no natural active dune field even in the arid core of the Thar desert and the hypothesis proposed by Allchin, Goudie and Hedge of expansion of arid zone in the present semi-arid and sub-humid parts of western India during the late Pleistocene requires to be tested in future.

Other archaeological sites located during the exploration are as follows.

Near the village of Bana, 8 km north of Sojat on Bilara road, there are extensive exposures of fine-grained yellow chert in limestone hills. On these exposures there are numerous scatters of flaked debris of microlithic and older (Middle to Upper Palaeolithic) industries. The nature of the clusters suggests them to be relatively undisturbed original flaking floors.

In a cultivated field, 47 south of Nagaur on the left side of the Nagaur-Jodhpur road, chert flakes and cores of microlithic and older industries were collected.

At a site six km east of Pokhran by the left side of the Phalodi-Pokhran road, a few wind-blasted rhyolite flakes of Middle Palaeolithic type were collected.

About 40 km south-west of Jaisalmer and 5 km north-east of the village of Sam there is a large, partly reactivated dune-field by the left side of the Jaisalmer-Dhanana road. The dunes are about 10 m high. There are several surfaces of compact brownish dune exposed at 5 m and 10 m heights from the road. On the 5-m surface one weathered sandstone chopper, two chert cores and tiny bone fragments were collected. On the 10-m surface from two scatters, with a diameter of about 5 m each, a number of chert and quartz flakes, cores$_5$ a few blades, small chert pebbles and tiny bone fragments were collected. These surfaces get exposed and buried due to deflation and redeposition of blown sand.

A number of fluted cores, flakes and blades of fine-grained sandstone and chert and a large flake of sandstone were collected from the weathered brown surfaces at 1 to 2 m height from the ground level at a site 60 km south of Jaisalmer on the right side of the road to Barmer.

Near the railway station of Khadeen on Barmer-Mundabo railway line two rhyolite flakes, each on two surfaces of high dunes were collected.

Near the village of Ramji-ka-Gol, 42 km north of Sanchor on Barmer-Sanchor road, was discovered one small Acheulian handaxe of rhyolite in the *murrud* by the edge of the road. This *murrud* is brought from a quarry at Aniyari, 12 km north of the site. On the dunes by the right side of the road microlithic tools were collected from a weathered surface.

Near the village of Ranodar, 26 km north of Sanchor and 3 km south of the Luni bridge, microlithic tools on chert were collected from a cultivated dune field by the right side of the road.

76. EXPLORATION IN DISTRICT BHARATPUR.—The Delhi Circle of the Survey, in the course of exploration, has brought to light sites yielding Painted Grey Ware and its associated wares at Pala, Sikhasa and Tamarer, mounds yielding pottery of Kushana and successive periods at Arwara, Buharu, Umrain and Unaya, and painted rock-shelters at Mundhpur,

77. EXPLORATION IN DISTRICT CHITTAURGARH.—Shri S. R. Shrimali of the Western Circle of the Survey, in the course of his exploration, noticed early historical sites yielding red and black wares, spouts and bowls at Khor and Oradi (Mataji Oradi) on the bank of the river Gambhiri. Further, at Pandoili, a temple known as Lalitamata temple, datable to *circa* eighteenth-nineteenth century A.D., at Senva a ruined temple with inscription assignable to eleventh century A.D., and two other temples datable to *circa* eighteenth century A.D. were noticed.

78. EXPLORATION IN DISTRICTS JHUNJHUNU AND SIKAR.— In continuation of last year's *{1978-79,* pp. 20 and 31) work, Shri Vijaya Shankar Srivastava of the Department of Archaeology and Museums, Government of Rajasthan, in his survey for the antiquarian and art remains in Shekhawati region, noticed a rich tradition of mural paintings in the temples, cenotaphs, *havelis* and step-wells. One of the cenotaphs, datable to seventeenth century A.D., at Udaipurvati, besides paintings, has painted inscriptions both in Persian and Hindi. The cenotaphs at Ganesi, Kasli, Parasrampura and Reengus have paintings of the eighteenth century A.D. Most of the important centres of the region, viz., Bhaleri, Fatehpur, Lakshmangarh, Mukundgarh, Nawalgarh, Ramgarh, Rani, Ratnagarh, Sardarshahar and Sethna, have rich tradition of painting in the residential mansions *(havelis)* of Seths. These murals depict all aspects of social and cultural life of the people. However, themes from the *Puranas* dominate*; havelis* of the Jainas are also decorated with Hindu themes.

TAMIL NADU

79. EXPLORATION IN DISTRICT CHINGLEPUT.—Shri P. Narayana Babu of the Southern Circle of the Survey, assisted by Shri S. Shivananda, explored the Palar basin with a view to finding out the settlement pattern, and movement of the megalithic folk in the region, and noticed megalithic remains at Madur and Neikuppam. Of the two intact dolmens noticed at the former site, one measures 1.7 m sq rising to a height of 1 m. The orthostats are of irregular and undressed stones. At Neikuppam, a number of urn-burials, varying in diameter from 45 to 50 cm, were noticed. Black-and-red Ware sherds were recovered from this disturbed site.

Further, early medieval habitation sites yielding thick dull red ware, were noticed at Kambarajapuram, Kammavariapalaiyam, Kilkadirpur, Mulapattu, Peramanallur and Pudupakkam. A terracotta human head, measuring 5 cm, was collected at Mulapattu. A bead manufacturing site yielding beads, in various stages of manufacture, crucibles and other equipments, was discovered at Vadavur. The beads found are in various shapes such as tubular, drum, bicone, etc. and made on agate, chalcedony, glass and so on. Temples assignable to the Chola period, with inscriptions, were noticed at Angambakkam, Magaral and Vishar, and temples belonging to the late Chola times at Govindavadi. Temples in Vijayanagara style were noticed at Aiyangarakulam and Vengudi.

80. EXCAVATION AT POLUVANPATTI, DISTRICT COIMBATORE.—The Department of Archaeology, Government of Tamil Nadu, under the direction of Dr R. Nagaswamy, carried out excavation at Poluvanpatti where ancient temple with inscriptions assignable to the eleventh century A.D. had been noticed. These inscriptions speak of the existence of a commercial settlement near the temple which took interest in its maintenance. The excavation was conducted with a view to ascertaining the potentiality of the site which had yielded earlier a number of

interesting terracotta figurines. Excavation revealed that the site was under occupation from early times and came to an end in the medieval period due to conflagration as is evident from a 1>2 m thick deposit of ashy soil. In the habitation layers floors made up of rammed earth were encountered, Among the antiquities recovered, mention may be made of a terracotta seated human figurine (pi. XVIII A) and a terracotta seal datable to early medieval times. The seal has tiger, fish and bow emblem with a legend reading *Varmanaha,* obviously a king.

81. EXPLORATION IN DISTRICT DHARMAPURI.—Professor K. V. Raman of the Department of Ancient History and Archaeology, University of Madras, assisted by Drs A. Swamy and P. Shanmugam, explored the western part of the District and collected neolithic celts which, were under worship from Adanur, Adiyamankottai, Akkamanahalli, Errabhayyanahalli, Mukkanur, Muttur, Nagarkudal and Puchchettayahalli. However, a neolithic celt was collected from a mound yielding black-and-red, black and red wares at Adanur. Besides, the sites at Adiyamankottai, Kadakattur, Nekkunti, Panaikulam and Puchchettahalli yielded black-and-red ware. Hero-stones with Vatteluttu inscriptions were noticed at Adanur, Kuppuchettipalli and Palinjarapalli. Hero-stones of a later date were found at Akkamanahalli, Asanampatti, Balajangamanahalli, Karabayanahalli, Nagarkudal and Sivampatti.

82. EXCAVATION AT KOVALANPOTTAL, DISTRICT MADURAI,—The Department of Archaeology, Government of Tamil Nadu, under the direction of Dr R. Nagaswamy, conducted a small-scale excavation at the site near Madurai which was earlier reported as an urn-burial field, now being used as a cemetery by the local residents. Excavation revealed urn-burials associated with the usual megalithic pottery. Neolithic and microlithic tools were also found.

83. EXCAVATION AT T-KALLUPATTI, DISTRICT MADURAI.—The Southern Circle of the Survey, under the direction of Shri L. K. Srinivasan, assisted by Sarvashri P. Narayana Babu, P. R. K. Prasad and Shivananda Venkat Rao undertook a small-scale excavation, in continua tion of the previous season's *(1976-77,* p. 46) work, with the view: to probe into the undisturbed locality of the megalithic habitational area; and to assess its relationship, if any, with the rock-shelters in the close vicinity.

Excavation in a rock-shelter and the habitation at the foot of the hill revealed two phases of occupation.

Phase I is represented by the occurrence of microlithic tools and a few sherds of handmade dull red ware. The sherds arc too fragmentary to determine the shapes.

Phase II is marked by the presence of Black-and-red Ware as well as white painted black, black-and-red wares and Russet-coated white painted ware. The types encountered in the ceramic industry include deep bowls with or without featureless rims and other known megalithic pottery types. The ceramic industry is wheel turned. The designs of painting include simple bands and criss-cross, made of parallel lines. Other important antiquities recovered include: beads of terracotta and semiprecious stones like rock-crystal, glass as well as paste; copper objects such as pin or antimony-rod and an object with bird motif probably part of a knob or finial of a lid; and iron pieces.

84. EXPLORATION IN DISTRICT NORTH ARCOT.—In the course of exploration, Shri Hanumanthappa Gangappa Telugu of the Southern Circle of the Survey, discovered megalithic cairn-circles ranging in diameter from 6 to 19.5 m, at Mettupalaiyam, Murugappadi and Tirumalai, all in Polur Taluk. Interesting discovery, however, is that of a rock-cut burial with an opening of 1 m sq in arch shape, on the right bank of the river Erumudi near the hillock called Parvathimalai. Besides, sites yielding medium to coarse red ware and black ware of the historical period and pottery of medieval times were noticed at Gangala Mahadevi, Gudalur,

Palankottai, Peranampakkam, Sadupperi and Sanarppalaiyam, all in Polur Taluk, The site at Gudalur also yielded a few sherds of Russet-coated white-painted ware and black-and-red ware. Shri B. K. Sinha of the above mentioned Circle discovered a painted rock-shelter yielding stone tools like core, flake and core scraper, near Tirumalai. The paintings are in dark red.

85. EXCAVATION AT APPUKKALLU, DISTRICT NORTH ARGOT.—In continuation of last season's {*1976-77,* pp. 47-48) work, the Department of Ancient History and Archaeology, University of Madras, under the direction of Professor K. V. Raman, assisted by Drs A. Swamy, S. Gurumurthy and B. Shanmugam resumed excavation and confirmed the three-fold cultural sequence revealed earlier. The sequence is: Period I—Megalithic; Period II—Early historical; and Period III—Early and later medieval times. In this season's work, floor levels with post-holes were laid bare in all the periods. The ceramic industries of all the periods were same as the ones found in the previous season. However, a rich assemblage of minor antiquities including terracotta (pl. XIX A), shell and iron objects, beads, bones and a tiny piece of gold ornament, was recovered.

86. EXPLORATION IN DISTRICT SALEM.—Professor K. V. Raman of the Department of Ancient History and Archaeology, University of Madras, assisted by Drs A Swamy and P. Shanmugam, in the course of exploration, discovered a vast mound covering an area of 4 acres and rising to a height of 5 m at Uttamacholapuram, 10 km south-west of Salem. The mound yielded pottery belonging to early historical and medieval times. A few terracotta figurines and shell bangle pieces were also collected.

87. EXPLORATION IN DISTRICT SOUTH ARCOT.—Shri P. Arasu, a research scholar in the Department of Ancient History and Archaeology, University of Madras, in the course of his exploration in the Tindivanam Taluk, located an ancient habitational mound rising to a height of 3 m and covering an area of 2 acres, at Vidur, 20 km south of Tindivanam. Black-and-red, Russet-coated painted, black, red-slipped and coarse red wares were collected. Some of the sherds showed graffiti on them. Near Sembakkam, 15 km north-west of Tindivanam, a mound yielding red-slipped, coarse red and black wares and a few pieces of terracotta ear-ornaments, belonging to late medieval times, was discovered. Hero-stones assignable to the Pallava and late Pallava periods were noticed at Alagraman and Pampundi.

The Department of Ancient History and Archaeology, University of Madras, in the course of exploration noticed megalithic burials at Perungalur and Tirukattalu, temple dedicated to Vishnu at Vellimedu, inscription engraved on rock at Nagavaram, Puliyannur and Siruvalur and palm-leaf manuscript at Puttandal.

The Southern Circle of the Survey, in the course of exploration in the District, brought to light neolithic tools at Amirdhi, black-and-red ware at Kalpattu and Kavitur, rock-cut caves belonging to Pallava period at Malaya Kovil and Mavilangai, sculptures belonging to *circa* tenth-eleventh century A.D. at Kodiyam, temple at Dadapuram and hero-stones bearing Tamil inscriptions at Kattur and Pampudi.

88. EXPLORATION IN DISTRICT TIRUCHCHIRAPALLI.—Professor K. V. Raman of the Department of Ancient History and Archaeology, University of Madras, assisted by Dr P. Shanmugam, discovered early historical sites yielding black-and-red ware at Gopurappatti, Komakudi, Nagar, Paccampettai, Panamangalam, Pinnavasal, Sirukambur and Tirumangalam; medieval sites at Kurrur, Pullambadi, Sendamaraikkan Palur, Talutalapatti, Tirumanamedu and Udaiyarnattar; and a number of village deities like Ayyanar, Karuppanna-svami and Maduraiveeran in many villages.

89. EXCAVATION AT GANGAIKONDACHOLAPURAM, DISTRICT TIRUCHCHIRAPALLI.—The Department of Archaeology, Government of Tamil Nadu, under the direction of Dr R, Nagaswamy, conducted excavation at the mound called Maligaimedu, and exposed a massive baked brick wall extending on all directions. The wall, 1.4 m in width, the exposed length being 1.8 m, was found plastered with lime and associated with floor-levels j made of lime. This structure is probably a part of the palace-complex of the Cholas.

UTTAR PRADESH

90. EXCAVATION AT FATEHPUR SIKRI, DISTRICT AGRA.—In continuation of the last year's *{1978-79,* pp. 53-56) work, excavation was resumed at FPS-II, under the joint collaboration of the Survey and the Aligarh Muslim University. The work was directed by Shri W. H. Siddiqi, assisted by Shri K. P. Poonacha, Dr Arun Kumar, Sarvashri C. B. Mishra, Sushil Kumar Jain, B. B. Sur, Y. K. Sharma, Chiranjilal and H. K, Kathpal of the Survey and Professor R. G. Gaur, assisted by Sarvashri K. K. Mohammad, M. A. Alvi, S. Hussain Haider, Mohammad Abid, Zahid Hashimi and Tahir Ali Khan of the University.

The purpose of the excavation was: (i) to expose complete house plans; (ii) to trace the citadel walls; (iii) to verify the position of the southern water works; and (iv) to mark out the extension of the royal market on the eastern side. The exposed structures are built of rubble masonry in lime and concrete with plastered walls and floorings. These are remains of domestic architecture, having covered porches *(deorhis)* enclosed courtyards, verandahas, rooms and bathrooms. In a way, the alignment and size of these structures are different and devoid of ornamentation, probably due to social status of the occupants. The rubble walls were plastered with lime; some of them had circular domed roofs, their bricks are found in abundance in the fallen debris. A structure on the southern side reveals the presence of series of deep niches on the wall. There was also a double storeyed structure with square hall in the centre flanked by rectangular rooms, the roof of which is lost. This was provided with a staircase at the north-eastern end of the square hall. On the south-western end, the partly exposed structures reveal a *hammam,* having plastered walls and stone paved floorings. It is also provided with flight of steps to the platform on its north-eastern side. A rectangular cistern was unearthed on this platform measuring 3.5 x 2.5 m. A square *chabutra* was also provided on the northern side with a deep niche in the western wall. To screen the main chamber, rectangular red sandstone slabs were affixed on the southern wall. A service door was provided in the east having stone paved sloped passage *(galiara)*. Below this *(galiara)* are four drains, running towards a huge pit. It may be said that the so-called 'tank' was nothing but a refuse water pit, provided with a long and thick wall on the southern side. The bath in the basement is rectangular on plan. The domed roof is built of *lakhauri* bricks. The inner chamber has a running dados measuring 1-10 m high on all sides having fine square green glazed tiles, a few of which are still extant. One of the existing square tiles on the north-eastern side of the wall measures 14x14 cm. For channelling the hot and cold water, masonry cisterns in bricks connected with terracotta pipes were also provided. The centre of the domed roof has a circular hole for light and air. It is presumed from the available evidences that this bath must have been part of the *haramsara* belonging to the nobles. The heat chambers of the bath were below the flooring, made of bricks in circular *tandoor* type, provided with some metallic or earthern pot on its rim, and water was supplied through terracotta pipes from behind. The burning effects on the chamber area indicates its constant and extensive use.

The structures on the south-eastern side were built of dressed stone blocks. Altogether there were six rooms in north-east and south-west orientation. Three rooms have been uncovered on the northern side; two of them are interconnected with entrances from the eastern side. A

rectangular room of dressed .masonry was also exposed. The interior of the room revealed a number of niches, besides trellis windows of *lakhauri* bricks on the eastern wall.

The excavation also revealed remains of series of shops on the southern side wall of the refuse water pit, attached externally. In front of these shops is the wide road and at present connecting Agra Gate and Naubat Khana. The other side of the road has also revealed the remains of shops in a row.

Excavation on a mound in Sector FPS-VJ, in an area of 25 x 22 m, revealed the ground plan of a building, comprising a verandah (6.75 m EW x 4.50 m NS), couple of rooms (4.5 m NS x 3.5 m EW), spacious hall (6.75 m EW x 4.35 m NS) and side rooms (4.35 m). The structure is built of massive rubble with lime mortar. It was on raised platform, approximately H5m high. The main entrance to the structure is on its north. The rooms were provided with doors. In total there are twenty doors of 1 .20 m wide. The excavation indicates the practice of double door system, followed by the Mughals. The thickness of the walls of this structure vary from 1.20 m to 1.60 m. The building is also provided with 1 m wide balcony on all the four sides, possibly provided with flat as well as domed roofs. Behind the structure was an open terrace (4.10 m wide x 19.10 m length) running all along the western half, now fully exposed. About 13 m. east of the plinth there stands a stone fountain carved with chevron, 2.10 m in diameter, having petalled outline, its depth being 1.08 m.

The boundary walls which enclosed the main structure and garden around the fountain, was also exposed along with the remains of a guard house. Strikingly, no remains of kitchen, bath, fire place or lavatory block were encountered during the excavation. On plan it resembles the famous Daftar Khana building at Fatehpur Sikri. A drain connected with a soakage tank and remains of brick-built well with a huge dilapidated platform connected with the water-works and a raised tank were also unearthed.

The excavation at the so-called Mint *(Karkhanas)* area revealed a spacious courtyard, two-bay deep colonades with stepped and sloped entrances, and arched passage within the central cloisters. The floorings had original lime concrete plaster yielding sets of ornamental iron horse-shoes and nails of Mughal variety. The area was probably used as the royal stable.

Ceramics include the Chinese blue and white, Celadon, glazed and red pottery. The prominent shapes are vases, deep large dishes *(gabs),* bowls *(pyle)* and jars *(surahis).* A few tiles in red, yellow, green and blue colours were also found. The minor antiquities include bangles, beads, iron tool, horse-shoes, nails, copper and silver coins.

91. EXCAVATION AT MAHTAB BAGH, AGRA, DISTRICT AGRA.—Shri W. H. Siddiqi, assisted by Sarvashri Sushil Kumar Jain, Vinod Kumar, G. P. Singh, Y. K. Sharma and B. B. Sur of the Survey, carried out an excavation at Mahtab Bagh, opposite Taj Mahal. The main purpose of the digging was to confirm the tradition that Shah Jahan wanted to construct his own tomb in black marble and to find out the nature of the ancient structure exposed by river flood. The partly-exposed structures and wide terracotta pipes, running towards east-west and joining with its ruined structures of waterworks on eastern side of the plot, were carefully exposed. The digging revealed a garden laid out in rectangular plan, enclosed by brick walls and a thick wall with corner bastions on the river side. The foundation of the enclosure walls, lying buried under thick deposit of sand and silt were partly exposed with a view to finding out its dimensions and geometry. An octagonal tank of burnt bricks, measuring 21 x 14 x 4 cm, was also exposed. The tank has foliated edge in lime similar in design to the rock-cut lotus garden of Babur at Dholpur. This shows that the site was originally laid out by Babur and was maintained by later Mughal kings. There is no evidence of having a raised plinth similar to that of the Taj Mahal. However, the possibility of Shah Jahan's intention to have a simple tomb over his grave in Mahtab Bagh cannot be ruled out.

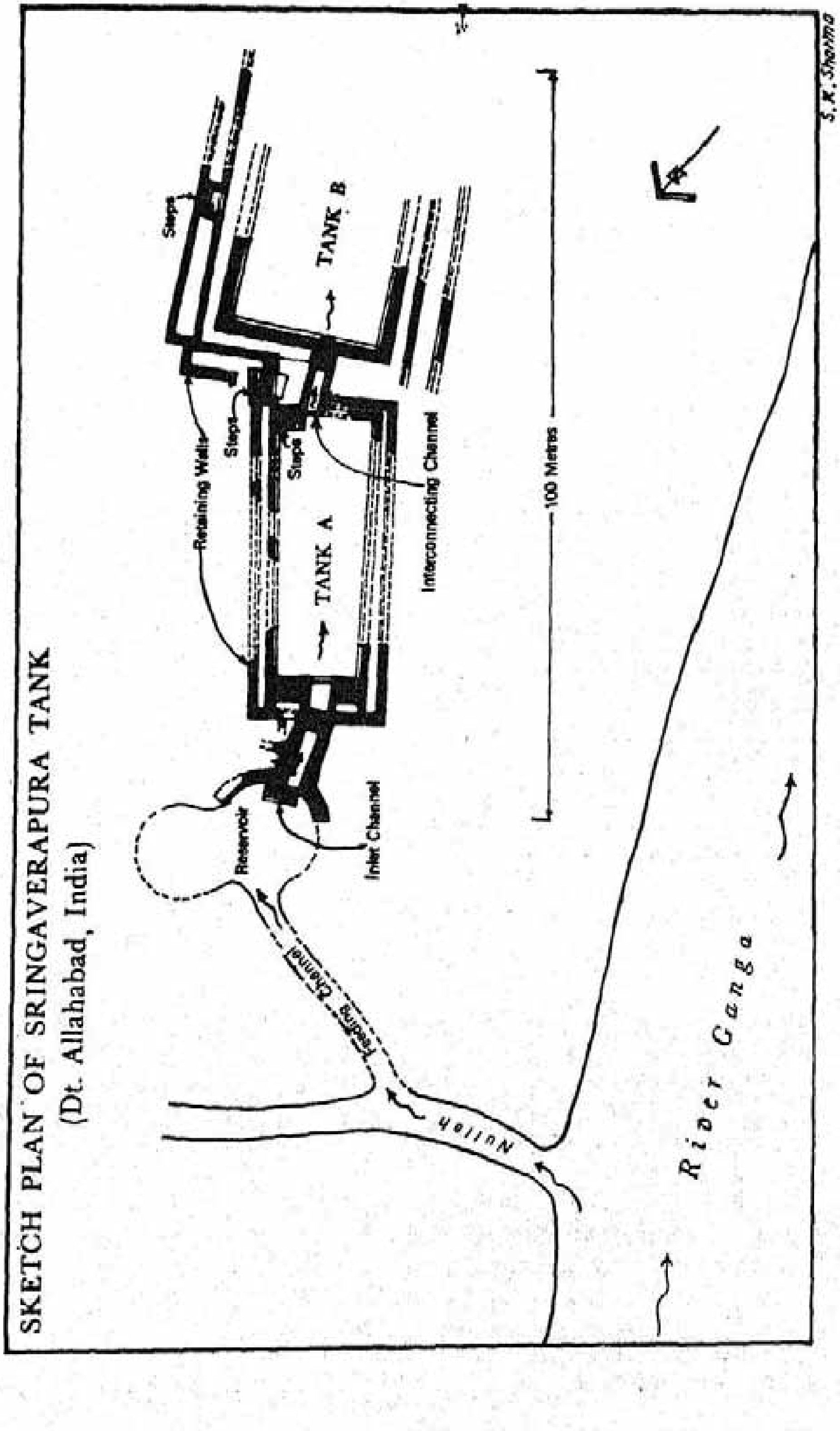

SKETCH PLAN OF SRINGAVERAPURA TANK
(Dt. Allahabad, India)
TANK A
TANK B
Steps
Steps
Steps
Retaining Walls
Interconnecting Channel
100 Metres
Reservoir
Inlet Channel
Feeding Channel
Nullah
River Ganga
S.K. Sharma

FIG. 10

The important antiquities from the site include Chinese and glazed Mughal pottery, pieces of copper spouts of fountains and huge quantity of fragments of terracotta pipes and blue glazed tiles.

92. EXCAVATION AT SRINGAVERAPUR, DISTRICT ALLAHABAD.—In continuation of the previous season's *[1978-79,* pp. 57-59) work, the Excavations Branch (II) of the Survey, in collaboration with the Indian Institute of Advanced Study, Simla, under the project 'Archaeology of Ramayana Sites', resumed excavation under the direction of Professor B. B. Lai and Shri K. N. Dikshit, assisted by Sarvashri B. P. Saxena, B. R. Meena, V. C. Sharma, B. B. Sharma, R. S. Sharma, Lai Singh Mamani and D. V. Sharma of the Branch, Sarvashri R. N. Kaw and S. K. Srivastava Of the Institute and Shri M. S. Mani of the Directorate of the Survey, with the main objective of fully exposing the baked brick-built tank.

Excavation revealed that the tank (fig. 10) was fed through a channel provided at the northern side and receiving water of the Ganga through a nullah when the river was in spate. A chamber, the full extent of which remains to be ascertained, was provided in between the tank and the channel.

The tank-complex can be divided in to two parts, A and B. Tank A (PI. XXA) measured 34.3 m in length, 13 m in width and 4.1 m in depth, whereas Tank B (Pl XX B) has exposed length of 42.4 m, 26 m in width and 7.1 m in depth. The two units are interconnected by a channel measuring 5.3 m in length and 1.35 m in width. A flight of steps is provided along the retaining wall of the Tank B. About 35 m south-west of these steps, some structural remains, possibly part of retaining walls, were noticed.

The Gangetic flood alluvium and fallen baked bricks found at the bottom of the tank suggest the existence of these two phases of use, but without much gap between them. The associated pottery, terracotta figurines and other antiquities suggest that the tank was under use in the beginning of the Christian era. There is, however, a possibility that it might have been constructed even earlier.

Among the antiquities recovered, terracotta figurines of Hariti holding a child in the lap, deserve special mention.

Excavation in the area, east of the main tank, revealed structural remains of baked bricks such as walls, steps, drains, floors, etc., probably a part of a complex. Terracotta figurines and pottery of the Gupta period were also encountered in this area.

93. EXPLORATION IN DISTRICT ALMORA.—Dr M. P. Joshi of the Kumaon University, in the course of his exploration, noticed at a distance of 16 km east of Almora, a trench-like cutting (10 x 5 m) with thirty-seven cup-marks scooped in the rock. The cup-marks vary in diameter from 25 to 6 cm and in depth from 55 to 2.5 cm. Small pieces of quartz as well as rolled flat, circular and oval-shaped pebbles were found in several cup-marks. However, a small piece of potsherd was encountered in one of them. Towards north of the above-mentioned area, at a higher level, three circular pits surrounded by cup-marks were noticed. The pits widen as they go deep, and some of them are as wide as 1.2 m at a depth of 1.3 m. The pits are filled with rubble. The sides of the pits are provided with holes ranging in diameter from 5 to 7 cm.

Close to the above-mentioned trenches a number of heaps of rubble were noticed. The nature of these heaps has to be ascertained. However, they seem to be cairn heaps. Besides, a chopper-like implement in quartz was collected. Local herdmen reported that they had collected some bangle pieces in stone from these pits.

94. EXPLORATION IN DISTRICT AZAMGARH.—During the course of exploration, the Mid-Eastern Circle of the Survey, discovered sites yielding black-slipped and Northern Black Polished wares besides contemporary cultural material at Andika, Ashrafpur, Basai, Bhaderea, Bharuli,

Chauki, Deodiha, Fatehpur, Ganjaura, Jamalpur, Kaneri, Padrian, Painkalan, Puk and Rekaicha; and sites yielding red ware and medieval ceramics at Araon, Bankot, Karvi, Kasba Fatehpur and Khasaukalan.

95. EXI[5]LORATION IN DISTRICT BIJNOR.-—Shri G. B. Misra of the Northern Circle of the Survey, in the course of his exploration in Bijnor Taluk, discovered Ochre-coloured pottery at Jalalpur-Qazi; Sunga-Kushana and early historical ceramics at Rambagh and Islampurdas; and medieval pottery at Hirderampur Bangar. A brick temple surmounted by *sikhara* was noticed at Sadhupura.

96. EXCAVATION AT MORADHWAJ, DISTRICT BIJNOR.—In continuation of last year's *(1978-79,-pp,* 73-74) work, the Department of Ancient Indian History, Culture and Archaeology, Garhwal University, Srinagar, resumed excavation under the direction of Dr K. P. Nautiyal assisted by Sarvashri B. M. Khanduri, Vinod Nautiyal, D. L. Rajput, Ramesh Khanduri, B, B. S. Rawat and P. R. Semwal, at Moradhwaj with a view to tracing the extension of the Kushana settlement, besides imparting training to the students of the post-graduate course. The excavation brought to light a structure, probably a temple (pl. XXI A), situated in the heart of the settlement of the Kushana times (Period II B).

The rectangular (9.7 x 6.7 m) temple has a sanctum and a *mandapa* measuring 2.2 and 3.6 m sq. respectively. The average width of the wall of the sanction, is 1.3 m while that of *mandapa* is 1.55 m. The interior of the temple has been exposed to a depth of 2 m exposing thirty courses of bricks. The sizes of the bricks vary from 32 x 21.5 x 6 to 31.5 x 20 x 6 cm. The temple, oriented east-west, is provided with *pradakshina-patha* of 1.3 m width, which appears to be an unique trait of a Kushana temple so far found in India.

Another important discovery is that of two sandstone sculptures (pl. XXI B and C) measuring 31.5 x 23.7 and 25 x 15 cm. One of them made of white sandstone is weathered. In this sculpture Bodhisattva is shown seated in *padmasana* on a lion-throne, his palms in meditative pose with face perfectly graceful, and in meditative mood, with prominent *ushnisa* On the head and hairlocks flowing on the shoulders. Another Buddhist sculpture, made of red sandstone, is also seated in *padmasana* on the lion-throne flanked by four miniature figures seated in the same posture. The halo is carved out of the ficus *(vata)* leaves, which stylistically resembles a *chhatra.*

The terracotta art is also no less interesting and the excavation has contributed an assorted collection ranging from Bodhisattvas to *Matrikas,* human and animal figurines. A few princely figurines are interesting from the point of view of decoration. A broken Bodhisattva figurine with *Katisutra* and lotus-like armlet *(keyura)* exhibits full excellence of the terracotta art at Moradhwaj.

The ceramic industry is comparable to the one from the sites of the period in the Ganga valley. Other important finds of the Period include: copper bangle and antimony rod; iron nail, hook, arrowhead, knife, bangle, ring; and terracotta bead, ball, disc, wheel, cone and gamesman.

97. EXCAVATION AT ATRANJIKHERA, DISTRICT ETAH.—In continuation of previous seasons' work, the Department of History, Aligarh Muslim University, Aligarh, resumed excavation at Atranjikhera under the direction of Professor R. G. Gaur assisted by Sarvashri K. K. Mohamad, S. H. Haider, M. A. Alvi, N. K. Zaidi, Mohammad Abid, Tahir Ali Khan and Dr Q,. S. Usmani, with the view: to determining the nature of medieval habitation (Period VII); and to ascertain ing the continuity or otherwise of the post-Northern Black Polished Ware cultural periods (V and VII).

Excavation revealed remains of three periods (V—VII) in succession but Period VI appears to be disturbed. Two big rooms of a house-complex mearuring 6.42 x 3.38 and 6.6 x

2.3 m as well as other walls belonging to Period V (Kushana), were exposed. The house yielded a well preserved hearth and a barn (2.11 m diameter), coins, terracotta figurines, beads, etc. Though Period VI looked disturbed, it yielded some interesting artefacts. However, except remains of a few walls no house-complex could be traced. It appears that during this Period the site had lost its significance. However, in Period VII the cultural activity was restored to its full swing. To the early phase of this Period belong the remains of a Jaina temple measuring 23-7 x 20.3. Its inner room had earlier yielded an interesting but mutilated image of a Jaina *tirthankara.* The noteworthy feature of the temple is in its having a *pradakshina-patha. A* house-complex consisting of five rooms built of reused bricks and brickbats was encountered in the last phase of the Period. Besides, seven other rooms were also exposed. The complex yielded a variety of glazed ware, including Chinese Celadon ware. Other antiquities recovered include: stone images, pestles, weights; terracotta figurines, bangles, beads, skin-rubbers; bangles of shell and glass; iron rods, spearheads, arrowheads, nails; beads of semiprecious stones; and bone points.

98. EXPLORATION IN DISTRICT ETAWAH.—During the course of exploration, Dr G. A. Qamar of the Northern Circle of the Survey, noticed sites yielding Painted Grey Ware at Barauna Khurd, Burru Phaphund, Nagaria, Samain; Northern Black Polished Ware at the above sites as also at Barhan, Bikapur, Dobah, Gaonri, Kudarkot, Rurukalan and Sabhad; early historical and Sunga-Kushana pottery at Barauna Khurd, Barhan, Bhasaura, Bikapur Dobah, Burru Phaphund, Gaonri, Harchandpur, Kudarkot, Nagaria, Naugaon, Pakhangoi, Pasua (of Gupta period too), Rurukalan, Sabhad, Samain and Umrain; and medieval pottery at Ahiran, Asa, Balpur, Balsauli, Barauna Khurd, Barhan, Bhasaura, Bikapur, Burru Phaphund, Chakarpur, Chamkani, Chhachund, Dakhnai, Dobah, Fapkapur, Goanri, Gura, Harchandpur, Hasanpur, Jiraon, Kudarkot, Ladhaura, Madrai Jakh, Narha, Mau, Nagaria, Naugaon, Otaun, Pakhangoi, Pasua, Rurukalan, Rurukhurd, Sabhad, Samain, Shahpur and Umrain. Besides, medieval temples were noticed at Achalda, Airwa/Tikur, Dobah, Gahaisar, Gaili, Goanri, Harchandpur, Kudarkot, Kusmara, Mahabir, Mohamadabad, Nagla Nau, Nagaria, Pakhangoi, Rathgaon, Ruruganj, Rurukalan, Samain, Shankarpur and Umrain. A fortress was found at Goanri.

99. EXCAVATION AT AYODHYA, DISTRICT FAIZABAD.—In continuation of the previous season's work, the Excavations Branch (II) of the Survey, in collaboration with the Indian Institute of Advanced Study, Simla, under the project 'Archaeology of the Ramayana Sites', resumed the excavation at Ayodhya under the direction of Professor B. B. Lai and Shri K. N. Dikshit assisted by Shri S- K. Srivastava of the Institute and Sarvashri R. S. Sharma and S. K. Sharma of the Branch, with a view to ascertaining whether there is any earlier habitation than the Northern Black Polished Ware period, besides imparting training to the students of the School of Archaeology of the Survey. With these in views, work was under taken in as many as fourteen different spots along the river on the western and northern sides, in the heart of the settlement as well as on the eastern and southern sides.

Excavation revealed that the earliest period would go back to the early phase of the Northern Black Polished Ware datable to the beginning of the seventh century B.C., and the area was outside the distributional zone of the Painted Grey Ware. The Northern Black Polished Ware in the early phase was thin-sectioned, very well-fired, highly shining and in variety of shades such as coal black, steel grey, indigo, silvery, golden, etc. Some of the shapes were available only in this phase. The associated red ware showed change in shapes from early to middle and late phases. Terracotta figurines too show an evolution and available in greater variety (pl. XVIII B). Among the antiquities recovered mention may be made of: weights or cylindrical pieces of various sizes made of jasper, agate, chalcedony, etc., from all the levels;

beads; and pendents often imitating birds and animals made on rock-crystal and other semi-precious stones.

Within the Northern Black Polished Ware period, but not in its early phase, evidence of town planning with house of baked bricks, terracotta ring-wells, etc.,, could be ascertained.

After the end of the Northern Black Polished Ware period around the third century B.C, the occupation continued at Ayodhya through the Sunga, Kushana and Gupta periods to medieval times. A baked brick wall of the Sunga period was noticed. A part of a house-complex of the Gupta period (pl. XXII) was also exposed. The typical Gupta pottery encountered at this site had parallels at Sringaverapur and Bharadwaj Ashram.

100. EXPLORATION IN DISTRICT FATEHPUR.—The Northern Circle of the Survey, in the course of exploration discovered sites yielding Northern Black Polished Ware and associated wares at Jagannath Baba, Kaspon, Rampur, Reh, Sankha and Tharion. Two mounds, remains of Buddhist monastery and terracotta *yakshi* figurine datable to *circa* second century B.C. were noticed at Sankha. Sculptures belonging to the Chandella period were noticed at Chitapur and Harikhera. At Gambhiri a brick temple of Gupta period similar on plan to that of Bhitargaon was discovered.

101. EXPLORATION IN DISTRICT LUCKNOW.—Shri Rakesh Srivastava of the Department of Archaeology, Government of Uttar Pradesh, under the direction of Shri R..G. Singh, explored the Mohanlal Ganj Taluk, and noticed sites yielding Northern Black Polished Ware at Bajilkha, Kalli, Mastipur-tikya, Parwar and Utarthia, The site at Utarthia yielded fine grey ware as well. Pottery of Kushana period and terracotta star-shaped beads were noticed at Bhurdhari and Sisandi. Mounds belonging to the medieval period were found at Karora, Khujauli, Jabraila, Mati, Miranpur and Sulsamau, and broken sculptures of Vishnu and Yama were noticed at Karora. An image of eight-armed Ganesa was found lying in the village of Moheri Khurd.

102. EXCAVATION AT HULASKHERA, DISTRICT LUCKNOW.—In continuation of the previous season's work, the Department of Archaeology, Government of Uttar Pradesh, assisted by Sarvashri Hem Raj, R. K. Chaturvedi and Rakesh Srivastava, resumed excavation with the main objective of exposing structures belonging to the Kushana and Gupta periods.

Excavation revealed remains of a unique road showing two phases of activity, running in north-south direction, laid across the lake on its southern end. In the first phase the road was 9.6 m in width and was built in box pattern. The boxes, having two side walls measuring 65 cm and the central wall of 40 cm in width, built of bricks (sizes: 39 x 23 x 6.5; 37 x 22 x 6 and 35 x 22 x 5 cm), were found at 2.3 or 3 m intervals, and were filled with compact blackish clay quarried from the lake itself. The boxes were then sealed with rammed brickbats mixed with earth, which formed the surface of the road. The road has been exposed to a length of 60 m. This phase could be dated to the Kushana period on the basis of the sizes of the bricks. However, the second phase belongs to the Gupta period and the road in this phase was laid with reused bricks and brickbats; a revetment, of brickbats and loose earth, was provided on its western margin.

Another structure to be exposed was a rectangular (28.5 x 22.3 m) one, built of brickbats, belonging to the Gupta period. The outer wall of the structure is 1 m in thickness. The southern outer wall was found provided internally with rooms. The entrance was in the eastern wall. The pottery of the Gupta period is dominated by red ware represented by such types as huge storage jars, short-necked water vessels, bowls, dishes, lipped bowls, *surahis,* lids with various types of knobs, vases with mica dust on the exterior, long-necked spouted vases, ink-pot type lids and carinated deep bowls.

103. EXPLORATION IN DISTRICT MEERUT.—During the course of his exploration, Shri C. P. Singh of the Northern Circle of the Survey, discovered sites yielding Ochre-coloured pottery at Badla Kaithwada, Hajipur, Kansi and Rasulpur Zahid; Painted Grey and other associated wares at Atrara, Kansi, Mohammadpur Dhumi and Muzafarnagar Saini (also yielding black-slipped ware); Sunga-Kushana pottery at Idrishpur and Uldaypur; and medieval pottery at Aad, Dastoi, Dayampur, Fakarpur Kauatta, Kaili, Kayastgaondi Khoel and Paiendapur. Medieval temples were also noticed at Chobia, Dhauzri (Rasulpur) , Fatehpur Gagaoz, Kastia Shamshernagar, Mohammadpur, Akbarpur Rasana and Patholi, while mosques were found at Incholi, Meerut and Sarawa,

104. EXPLORATION IN DISTRICT MIRZAPUR.—Shri S. S. Gupta of the Prehistory Branch of the Survey, assisted by Sarvashri J. S. Dubey and Dhoptey, under the guidance of Dr.K. D. Banerjee, explored the painted rock-shelters with a view to establishing the chronology of the paintings normally assigned to the prehistoric period. Nine painted rock-shelters were discovered on the outskirts of Mau-Kalan, 30 km south-southeast of Robertsganj. Subjects of paintings include isolated or grouped figures of animals like antelope, wild buffalo, elephant, jackal, cow, goat and human figures armed with bow and arrow and even with gun (fig, 11). Representation of gun is significant. Paintings are in different shades of red. Microlithic tools made on chert and chalcedony were collected along with modern pottery from a few rock-shelters, while the rest did not have any deposit.

Sarvashri Rakesh Tiware and Amar Singh of the Department of Archaeology, Government of Uttar Pradesh, under the guidance of Shri R. G. Singh, explored the Robertsganj Taluk and noticed a site yielding artefacts belonging to the Lower and Middle Palaeolithic and Mesolithic industries. At the site known as Nai Dih at Bichchhi, a broken polished stone celt, microlithic tools, pottery with husk-marks. Northern Black Polished Ware, black-slipped and red wares, besides broken terracotta animal figurines, were found. Mesolithic sites were located at Duara, Kandacot, Mahadeva and Sitaji-ki-Kohbar. Stray polished stone celts were found at Agori, Barank, Bijauli, Chatara, Deori, Kamauji, Kandakot, Laseda, Orgai and Pali. Sixty painted rock-shelters were noticed at Chhatama, Duara, Jharia, Kaire, Kolare, Kuthalahawa, Mahadeva, Sitaji-ki-Kohbar and Suga-pankh. Remains of early medieval period as well as temple and broken sculptures were noticed at Baraila, Gauri-Shankar, Gorari, Lasada and Panchmukhi. A Siva temple belonging to early medieval period was located at Mandara. Medieval and late medieval sculptures were also noted at Adalganj, Chandauli, Gaudiha, Gothani, Kamauji, Karauli, Khevana, Kuruhul, Kusumhen, Oinimishra and Orgai.

The Department of Ancient History, Culture and Archaeology, University of Allahabad, under the direction, of Professor G. R. Sharma, assisted by Sarvashri V. D. Misra, D. Mandal, B. B. Misra, J. N. Pal, Ranjit Singh, Kamlakar Thakur, Manik Chand Gupta and Prakash Singh, conducted exploration and noticed an extensive Lower Palaeolithic site located northwest of the Adhesar hillock, at Mangara. The site, covering an area of 2 km sq yielded pebble tools, handaxes, cleavers, scrapers, knives, flakes, cores and debitage, made on quartzite. The artefact-bearing horizon was found sealed by a soil cover of 1 m thickness.

Two sites belonging to the Middle Palaeolithic industry were discovered at Magha and Songarha. The assemblage consisted of points, scrapers, discoids, cores and flakes made on quartzite. There are sites in the Adwa valley which yielded Upper Palaeolithic assemblage. The tools found include long and broad blades, parallel-sided blades, blunted backed blades, fluted cores and flakes, mainly made on chert. The sites belonging to the Epi-Palaeoli-thic industry found in the Adwa valley yielded parallel-sided blades, blunted blades, notched blades, scrapers, cores and flakes, apart from debitage. The artefacts are mainly of chert and chalcedony. A number of Mesolithic sites characterized by the microlithic tools like parallel-sided blades, blunted backed blades, serrated blades, scrapers, besides cores, flakes and other



FIG. 11. *Mau-Kalan : rock painting*

debitage, were also found in the Adwa valley. A number of megalithic habitation as well as burial sites were also discovered. Among them, the potential sites are Banjari, Gaurwa, Kawaljhar, Magha-Manigara, Pernia, Pokhara and Songarha. The burials are represented by types like cist within cairn, dolmenoid cist, Kotia-type cist and cairn circle. The diameter of the cairns vary from 15.45 to 4.25 m, and the height from 1.35 m to 40 cm. The maximum and minimum length of the cists are 2.25 and 1.05 m, while their width varies from 1.45 m to 60 cm. Cist type is the dominating one in the Adwa valley. The cists had capstones but not the portholes. The habitation sites, belonging to chalcolithic as well as iron age, were found near the burial fields on the bank of the river. The chalcolithic sites yielded red, black-and-red and black-slipped wares comparable even in shapes to the ceramics of Kakoria and Koldihwa. Iron age habitation sites are represented by the occurrence of red, black-and-red and grey wares. The shapes such as basins, bowls, shallow bowls, dishes, pedestalled bowls are comparable to the ones from Kotia and other Belan valley sites.

105. EXPLORATION IN DISTRICTS MAZAFFARNAGAR AND SAHARANPUR.—In the course of exploration, Shri K. N. Dikshit of the Excavations Branch (II) of the Survey, assisted by Sarvashri B. P. Saxena and D. K. Malik, discovered following sites belonging to the Harappan culture on the rivers Katha Nala and Krishni, both tributaries of the river Yamuna.

District	*Village/site*	*River valley*
Mu zaffarnagar	Hatchhoya-1	Katha Nala
-do-	Hatchhoya-2 (locally known as Sujangarhi)	-do-
-do-	Rahatpur	-do-
-do-	Un	-do-
-do-	Bhanti Khera-1	Krishni
-do-	Bhanti Khera-2	-do-
-do-	Jandheri	-do-
-do-	Jasala	-do-
-do-	Samalkha (locally known as Kankar Tila)	-do-
-do-	Thana Bhawan	-do-
Saharanpur	Tikrol	Katha Nala

_ These sites provide a link between the sites in District Saharanpur on the one hand and the sites in District Meerut on the other. The material culture of the sites on the Krishni are more or less akin to the one from Alamgirpur, whereas the sites on the Katha Nala represent Hulas assemblage. The distance between these sites is about 8 to 10 km and no where the actual occupational deposit is more than 50 cm to 1.80 m thick, exception, however, being Bhanti Khera-1, about 2 m high from the surrounding plain. Other sites are completely destroyed. Here, special mention may be made of a bowl-on-stand (fig. 12) found at Bhanti Khera-1. At Jasala, traces of mud platform overlying the natural soil was also observed in one of the exposed section. Further, the Painted Grey Ware was picked up from Khal (Barle-ke-Qila) near Shamli, and Durganpur (Harya Khera). These mounds were found located slightly away (nearly 1 km to the east) from the present stream, whereas Kushana and other settlements (Birol, etc.) are further away from the river banks.

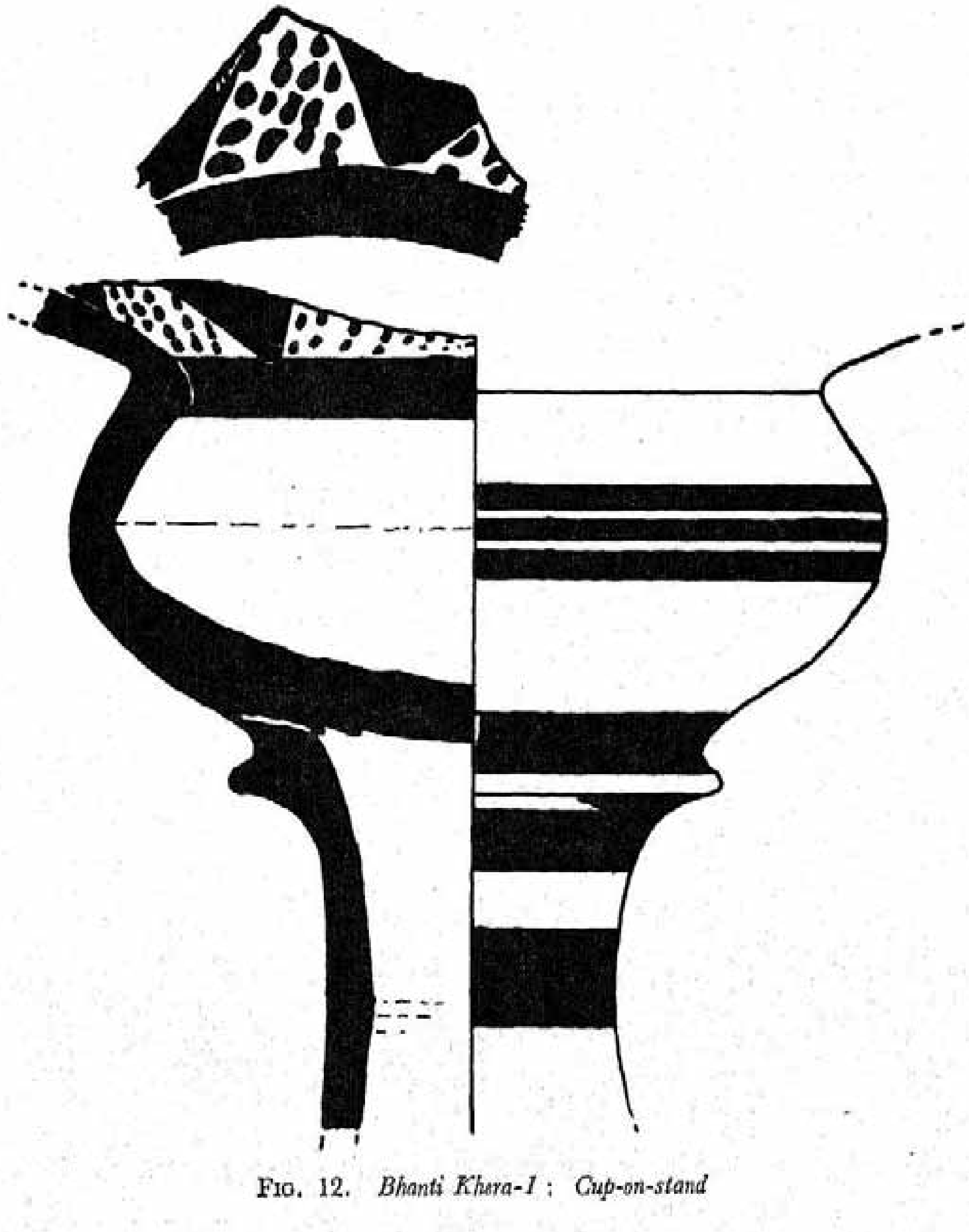


FIG. 12. *Bhanti Khera-1 : Cup-on-stand*

106. EXCAVATION AT HULAS, DISTRICT SAHARANPUR.—In continuation of the last year's *(1978-79,* pp. 60-61) work, excavation was resumed at Hulas under the direction of Shri K. N. Dikshit of the Excavations Branch (II) of the Survey, with the assistance of Sarvashri B. P. Saxena, B. R. Meena, V. G. Sharma, D. V. Sharma, R. S, Sharma, Lai Singh Mamani, B! B. Sharma, and D. K. Malik, with the view: (i) to ascertaining the extent and thickness of the mud-platform and other details of the Indus Civilization; (ii) to tracing the extent and direction of rain gulley or ditch noticed in the centre of the mound; and (iii) to examine the nature and extent of the massive burnt-brick structure belonging to the early Christian era.

Period I revealed a repertoire of the Harappan painted designs hitherto unknown in this area. Fragmentary burnt-bricks with finger impressions were also encountered. Evidence of hut-dwellings in the form of reed impressed burnt plaster were also found. The patches of burnt-floor with circular-pit activities were noticed in an area of about 100 m sq. An intact circular oven (pl. XXIII A) possibly used for baking the clay objects on a very small scale and a disturbed circular hearth on the top of the mud-platform extending towards the interior side of the southern edge of the mound were also noticed. Other important finds included fragmentary terracotta animal figurines (pl. XVIII C) and cart-wheel with raised central hub and beads of semiprecious stones. A variety of faience objects including beads and bangles were also found (pl. XVI C). A few indeterminate terracotta objects with two bifurcated curved terminals in different sizes noticed earlier at Bara, Bargaon, Sanghol and Bhagwanpura were also discovered.

The solid mud-platform belonging to this period was found running further on the south and south-east corner of the mound, sloping towards south-east. It was found running in an area of 46 x 35 m which works out to be about 1610 sq m. Its thickness, possibly achieved in two stages, ranged from about 1.10 to 2.20 m.

The ancient ditch or rain gully, noticed last year in the middle of the mound, separating the Harappan and the Painted Grey Ware settlements, was found running parallel to the burnt-brick structure noticed in Period IV.

In Period II, the excavation further confirmed that the Painted Grey Ware people settled down on the natural soil to the north and east of the ditch, which separated the Harappan settlement. Successive mud-floor-levels of this Period were also laid bare. But the area salvaged for this period was very limited.

The deposit of Period III was found below the massive burnt-brick structure of Period IV. A few sherds of Northern Black Polished Ware, grey ware and associated red wares along with the antiquities were noticed. An eye-goddess (pl. XXIII B) made of tortoise shell was also found. The chest, arm and the body are decorated with incised horizontal and oblique lines and circlets, each enclosing a singular dot.

In Period IV, the massive burnt-brick wall (pl. XIX B) was further exposed. The eastern arm was found running up to a length of about 54 m and then it joined a wall coming from the north. The remains of a wicket gate (?) and a few drains running from north to south forming the part of this structure were also seen. The north-eastern arm was running up to a length of 30 m. For understanding the plan of the structure, the direction of cross-wall has to be further pursued. Besides pottery, beads of semiprecious stones, copper coin, shell bangle, bone pieces and objects of terracotta such as bead, bangle, sealing and animal and human figurines were also found.

From Period V, except a few complete pots, no other important antiquity was found.

107. EXPLORATION IN DISTRICT UTTARAKASHL—The Northern Circle of the Survey, in the course of exploration conducted in the District, discovered architectural members and sculptures belonging to *circa* twelfth-thirteenth century A.D. at Barethi, Garh, Hitanee, Kuragan and Naitala. Temples representing wooden architecture and other secular structures, with exquisite carvings, were noticed at Denda, Sada and Thana.

WEST BENGAL

108. EXPLORATION IN DISTRICT MIDNAPUR.—The Eastern Circle of the Survey^ in the course of exploration in the District, brought to light the temples belonging to *circa* sixteenth-seventeenth century A.D. (Malla dynasty), built of laterite boulders at Dharapet, Gadadhara, Gokulchand, Kunwarpur, Parihati and Sonmukhi.

Further, at Parihati, from where a copper-hoard has been reported earlier, fine black-and-red, grey and red wares were collected.

H. EPIGRAPHY

SANSKRITIG AND DRAVIDIC INSCRIPTIONS*

ANDHRA PRADESH

1. HALE KANNADA INSCRIPTION, DHARMAPURI, DISTRICT KARIMNAGAR.—This undated inscription was issued by Aitavarmarasa, of the Haihaya family, whose overlord was the Rashtrakuta king Krishna. It refers to the gift of hundred *mattars* of land situated in the village Tumbula of Veligonda-12, as *siddhaya* yielding the revenue of *drammas* by Ayyana on the day of asterism *Uttarashadha* to one of the *mahajanas* named Revana. It also mentions the names of Dharmyara along with Mallapura, probably the capital of the Haihaya subordinate. The record may be dated palaeographically to the ninth-tenth century A.D.

2. KALYANI CHALUKYA INSCRIPTION, NARASINGAPURAM, DISTRICT KARIMNAGAR.—The inscription of Somesvara I bearing the title *Trailokyamalladeva,* son of Jayasinga of the Kalyani Chalukya dynasty, dated Saka 974, describes the conquest of Kanchi, Thanjavur, Sapta malava and the ruler of Dharanagara. It records the construction of a Siva temple called Naresvara at village Sulipaka in Atukura and also mentions the gift of fifteen *mattars* of *kisukad* land along with *Ratana* yielding the revenue of forty *gadyanas* to the *mahajanas* by Marakabbe, wife of certain Chamaraja, probably a feudatory of the king. The names of the composer and the writer are mentioned as Padmananhayya and Narayana respectively.

ASSAM

3. COPPER-PLATE, BARPETA, DISTRICT KAMRUP.—The inscription, dated Vaishakha 7 of Saka year 1738 (A.D. 1816) of Ahom king Sargadeo Chandrakanta Singh, records the grant of Choudhuryship and Patwariship to Otiram Choudhury of *Baukhi* Pargana.

GUJARAT

4. INSCRIPTIONS, BARTON MUSEUM, DISTRICT BHAVNAGAR.—Three inscriptions, engraved in Nagari characters and Sanskrit language, on the pedestals of images are in the Barton Museum. One, dated Vikrama 13(24) (A.D. 1267) records that the image of Mahavira was caused *to* be made by *Tha* Opalhana for the welfare of his mother Lakshmadevi. The consecration was done by Manikasuri. Belonging to the Vikrama year 1350 (A.D. 1293), the second inscription mentions that *Bham** Sajana got the image of Rukmini made at Kusuma-Tirtha for the welfare of his ancestors. The third one, dated in the Vikrama year 1370 (A.D. 1212), records that the image of Adinatha was caused to be made by Ajayasimha for the welfare of his family.

Information from: 1 and 2, Director, Archaeology and Museums, Government of Andhra Pradesh; 3, the Eastern Circle of the Survey; 9 to 11, Director, Archaeology and Museums, Government of Karnataka; 19 to 21, Director, Archaeology and Museums, Government of Madhya Pradesh; 24 and 25, Shri M. N. Despande, Nehru Centre, Bombay; 26, Dr (Smt.) Shobhana Gokhale of the Deccan College Postgraduate and Research Institute, Pune; 27 to 30, Director, Archaeology and Museums, Government of Rajasthan; 32, 34, 37 and 42, the Southern Circle of the Survey; 36, the Southern Circle and the Chief Epigraphist of the Survey; 45, the Northern Circle of the Survey: arid the rest from the Chief Epigraphist of the Survey.

5. MAITRAKA COPPER-PLATE CHARTERS, AMMALASA, DISTRICT JUNAGADH.—'Two copper plate charters of the Maitrakas from this place are now preserved in Bahadurkhan Museum at Junagadh. One of them, written by Kikkaka, is dated Gupta Samvat 208 (A.D. 527) and records the donation of a village Amalakavasati to a Buddhist *vihara* by Dhruvasena I, styled as *Mahasamanta Maharaja,* The *dutaka* was Pratihara Mammaka. The second charter, dated Gupta Samvat 290 (A.D. 609), written by *Sandhivigrahadhikrita Divirapati* Vatrabhatti, records that king Siladitya I donated the village Mada(ya)ntika in Kuberanagara-vishaya to a *vihara* constructed by Yasonandi in the same *vishaya* for the maintenance of the resident itinerant monks of the *vihara* as well as for its repairs etc. The *dutaka* was Kharagraha,

6. IMAGE INSCRIPTIONS, JUNAGADH, DISTRICT JUNAGADH,—All the three inscriptions are engraved on the pedestals of the images, now preserved in the Bahadurkhan Museum, Junagadh. The first inscription, dated in the Vikrama year 1338 (A.D. 1281), refers to the village Kutiyana. It records the making of an image of Parsvanatha along with *panchayatana* and *devakulika* in the village Kutiyana by Khimaka, son of *Sre* Kumarasimha of Srimalajnati, for the merit of his son Dhara. It was consecrated by Padmaprabha-suri *of the patta* of De[va]prabha and a disciple of Ratnaprabha-suri of Dharanapadra-gachchha. The other two, from village Uparkot, are in Nagari characters and Sanskrit language. One of them records that the image of Parsavanatha was caused to be made by Virama, son of Mahanasiha of Gurjarajnati in Vikrama Samvat 1343 (A.D. 1286), for the merit of his sister Kapuri; its consecration was done by Haribhadra-suri, the disciple of Hema-suri of Raja-gachchha. Dated in the same year (A.D. 1286), the other inscription records that the image of Parsvanatha was caused to be made by Chamdaka, son of Chamdasiha, for the merit of his wife; it was consecrated by Mallishena-suri,

1, TANK INSCRIPTION, PORBANDAR, DISTRICT JUNAGADH.—Dated in .Vikrama year 1886, Saka 1761 (A.D. 1827), the inscription records the construction of a tank called Bhojasara in Sudamapura (i.e. Porbandar) by Roopali Bai, the mother of Maharana Sri Vikramatajit of Jeshta-vamsa. The masons were Magha, Aila, Samaji, Morar and Makana of the Visvakarma family.

8. INSCRIPTION, PRABHAS PATAN, DISTRICT JUNAGADH.—This inscription, in Nagari characters and Sanskrit language, engraved on the pedestal of a panel (with some figures) is dated in Vikrama year 1305 (A.D. 1248) and records that the image of Sitalanatha was caused to be made by the minister Mandalike for the welfare of his mother Maha.. . . . ,a lady minister of Chivaradeva of Pragvata family. It was consecrated by Vardhamana-suri, a disciple of Vijayasimha-suri of the *santana* of Vira-suri of Nagendra-gachchha.

KARNATAKA

9. INSCRIPTION, CHITTAKALDEV, DISTRICT BIDAR.—The inscription on a stone slab at the foot of the *mahadvara* of a Siva temple, belonging to the sixteenth-seventeenth century A.D., records the donation made for erecting a lamp pillar to the Chittakaldeva temple, by a devotee named Siddoji Rao Sayogi Kulkarni,

10. JAINA INSCRIPTIONS, GHORTA, DISTRICT BIDAR.—Of the two inscriptions, the one, incised on lower *pattika* of the two niches of the *garbha-griha* of the Jaina temple, records the installation of Padmavati by Seri Setti, son of Jakanabbe. The other inscription on a stone slab, datable to the eight-ninth century A.D. is a commemorative one and records that Vardhamana Deva, a Jaina saint, laid down his life while in meditation.

11. INSCRIPTION, GUNDURA, DISTRICT BIDAR.-—Engraved on a stone slab, dated A.D, 1024, it records the donation of paddy for the maintenance of the Jaina *basati.*

12. HERO-STONE INSCRIPTION, HALEBID, DISTRICT HASSAN.—The first part, engraved in Kannada language and characters, refers to the victory of the Hoysala ruler *Mahamandlesvara* Vira-Ballala (II) over Rayamurari, Kesava and Narasinga. It also records the construction of a temple by the Hoysala king. The second part of the inscription, referring to the Kalachuri ruler Vira-Bijjaladeva and to a number of officials including Chenna-kalama-sahani, the latter endowed with a string of titles and epithets, is dated in Saka year 1111 (A.D. 1189). The stone is at present fixed into the ceiling of the Durgamba temple at Halebid, thereby obscuring the full view of the inscription.

13. Two HOYSALA INSCRIPTIONS, HALEBID, DISTRICT HASSAN.—Belonging to the reign of Hoysala Vira-Ballala (II), these inscriptions are in Kannada characters and language of the thirteenth century A.D. The first one records the capture of an elephant by *maleyamarvuta* Durgaiyya on Ashadha ba 11, Friday, in Bahudhanya. The second one is a hero-stone set up by the deceased's wife and records the death of *pattasahani* Ayichaya, who repulsed the attack of the armies of Samkamadeva in the battle of Madavalli at the command of the king. The parents of the hero are mentioned in the record as Chomi and Mayideva.

14. KANNADA INSCRIPTION, HALEBID, DISTRICT HASSAN.—Engraved on a hero-stone, in Kannada language and characters of about the thirteenth century A.D. it records the death of Benakeyasahani, the *aliya* (son-in-law or nephew) of Somaya Sahani, in a battle. His son Soveya is stated to have erected a stone in memory of the hero.

15. JAINA INSCRIPTION, HASSAN, DISTRICT HASSAN.—Engraved on the pedestal of a *Tirthankara* image, the inscription, in Kannada language and characters of the thirteenth century A.D., states that Nakanna and Honnanna, sons of *Srikaranada* Kavanna of Konga-nadu and disciples of Srutakirtideva of Ingalesvara, got the image of Neminathasvami made.

16. HOYSALA INSCRIPTION, HERAGU, DISTRICT HASSAN.—Written in both Sanskrit and Kannada languages and in Kannada script, it is dated in Saka year 1139 (A.D. 1217). Now set up outside the State Archaeological Museum at Hassan, the inscription mentions the installation of the image of Lakshminarayana in the village Heragu and the grant of two villages, Batteyanahalli and Bahubaliyahalli, along with forty *gadyanas* as *pindadana* to *Tantradhishthayaka, Mahapasayita* Avatara-bhattayya, for the services of the god, by the king. The grants were made free of all imposts and the donee is stated to have migrated from the *mahagrahara* of Darusa in Lolayadesa of Kashmira-rashtra.

17. KANNADA INSCRIPTION, HOLE-NARASIPURA, DISTRICT HASSAN.—Bearing the date Saka 1314 (A.D. 1392) it is written in Kannada language and characters and mentions the installation of the image of god Ramesvaradeva and registers some grants for *amrita-padi,* services made by the *prabhus, mahajanas* and others.

18. INSCRIPTION, JAMBURU, DISTRICT HASSAN.—The inscription, in Kannada language and characters of the tenth century A.D., records that Chavayya, son of Manikayya, a *pervarva* of Beddali and *senaboya* of Chandayya died in a battle fought at Ralividu in Kadirmmidi situated within Belvola, Chandayya granted ten *kolas* of land under the tank of *parggere* for the deceased. It is interesting to note *that pervarva* is the exact Kannada equivalent of Sanskrit *maha-brahmana,*

meaning 'great brahmin'. It is likely that Chavayya was a member of the *mahajana* body of the village.

MADHYA PRADESH

19. COPPER-PLATES, MALHAR, DISTRICT BILASPUR.—A set of three copper-plates (held together by a copper ring) with a circular seal was found by a farmer while ploughing his field. The record consists of twenty-eight lines, written in box-headed Brahmi script. Issued by the Somavamsi king Maha-sivagupta-raja, the charter records the grant of the village Sushka-Sirillika to the temple of Kapalesvara. The temple was caused to be constructed by Sivanandin of Kosala, and the grant was made at the request of Sivanandin himself for the maintenance of the temple (pl. XXIV A).

20. STONE INSCRIPTION, LEHANGA BHATHA, DISTRICT BILASPUR.—This inscription from Narmada-kund, 3 km from Lehanga Bhatha, is now preserved in the Rani Durgavati Museum, Jabalpur. Engraved by Vishvesvara, on the occasion of the construction of a Siva temple, it refers to the king Chhorideo, probably a descendant of the Kauravas, who defeated the Kalachuri kings (mentioned as Chedi kings) of Tummana at Bhandara and Lanji and confined them and their queens in a prison.

21. COPPER-PLATES OF SUDEVARAJA, MAHASAMUND, DISTRICT RAIPUR.—A set of three copper-plates is now in the possession of the Additional Tehsildar. These plates are held together by a copper-ring, attached to the bronze- seal. There are twenty-eight lines, written in box-headed Brahmi script of the fifth century A.D. The charter issued from Sirpura, by the king Sudevaraja, on the ninth, day of the month of Karttika, in the third regnal year, records the grant of the village Khalapadraka, situated in "Dakari *-bhoga* to Chaturvedin Brahmana Madhavasvamin of Kasyapa-*gotra* and Vajasaneya-*sakha* for the merits of his parents and himself. The inscription was engraved by Golasimha (pl. XXIV B).

MAHARASHTRA

22. BRAHMI INSCRIPTIONS, AJANTA, DISTRICT AURANGABAD.—Written in paint on the north-eastern wall near tile standing figure of Buddha in the main hall in the ground-floor of Cave 6, this inscription was discovered after chemical treatment. There are traces Of three lines in Brahmi characters of the late Gupta period; in the first line it mentions Sakya. Above this to the right, there is trace of another inscription in similar characters probably reading *devati.*

23. INSCRIPTION, VARAKHEDA, DISTRICT AURANGABAD.—This embossed inscription is now preserved in the Soneri Mahal State Museum at Aurangabad. It records the completion of the construction of a bathing *ghat* on the bank of the river Godavari in Saka year 1711 (A.D. 1789).

24. CAVE INSCRIPTIONS, KONDIVTE, DISTRICT BOMBAY.—An inscription from Gave 12 in Brahmi characters and Prakrit language, datable to the second-first century B.C., records the grant of a *vedika* ('railing') by a person hailing from Paithan. Another above the window, in Cave 8, in Brahmi script and Prakrit language, belongs to the second century B.C. and records the grant of a *vayika-suchi* ('window with a perforated rail pattern').

25. INSCRIPTION, THANALA CAVES, DISTRICT RAIGARH.—Engraved on a rock-cut tank (between Caves 16 and 17), in Brahmi script and Prakrit language, it belongs to *circa* first-second

century A.D. and records the gift of a *podhi* (water-tank) by Prakarasa, a disciple of Pujavati, hailing from (Pu)chhara, i.e. Pushkara.

26. COPPER-PLATES, DISTRICT RATNAGIRI.—Out of the two copper-plate charters, the one of three plates belonging to the Yadava. period is dated in Saka year_1182 (A.D. 1260) and records that in the reign of the Yadava king Krishna, Kesava Mahajani donated a village named Teravataka in Karahataka 4, at the time of Uttarayana-samkranti *to* twenty Brahmins, whose names are given in the charter.

The second one of a single plate, dated Saka 1561 (A.D. 1639), written in Devanagari script and old Marathi language, records that during the reign of Sultan Mohammad Shah, there was an opening of the port, named Sultani, on Thursday, Karttika *shukla-panchami, Mulanakshatra, Pramathi-samvatsara* 1561. It also refers to the installation of an image of Panduranga on *ekadasi, nakshatra Uttaraphalguni,* Saka 1562, by Raghopadhye Gurjar, and a field in the village Satavali was donated to him.

RAJASTHAN

27. INSCRIPTION, KACHHOLA, DISTRICT BHILWARA.—This inscription, found in a *baori,* is dated in Vikrama Samvat 1200.

28. INSCRIPTIONS, NEAR CHITTAURGARH, DISTRICT CHITTAURGARH.—Of the two inscrip tions, one on the third pillar of the bridge over the river Gambhiri, is dated in Vikrama Samvat 1303, while the second inscription engraved on the ceiling of the Amba temple in the village Ratkankandha on the Nimbhara road is dated Vikrama samvat 1113.

29. INSCRIBED SLAB, KAGARIA BALAJI, KHANDELA, DISTRICT SIKAR.—An inscribed slab containing eight lines in the Kutila script, ascribable to the eleventh century A.D., was unearthed at the place.

30. INSCRIPTION, REENGUS, DISTRICT SIKAR.—The inscription on the exterior wall of Shyamji-Khatu temple, provides important historical information. It reveals that the foundation of the temple was laid on Sunday, the first day in the bright fortnight of the month of Jyeshtha in Vikrama year 1777 (A.D. 1720) and the installation of the image on the seventh day in the bright fortnight of the month of Phalguna of the same year.

Another interesting discovery is a contemporary paper document, recording the grant of a land to Brahmana Fakirdas, who laid the foundation of the temple. Both the epigraph and the paper document indicate that Vijayaraja, a feudatory of Kanwar Abhaya Singh, son of the celebrated Rathor Ajit Singh of Marwar, was the local ruler. The family affiliation of Vijayaraja is however not mentioned in both these records.

31. INSCRIPTION, UDAIPUR, DISTRICT UDAIPUR.—Dated in Vikrama Samvat 1848 (A.D. 1791), this inscription, in local dialect, records the construction of a step-well by a lady named Rampyari in Marupura, wherein the statue of Thakur Ramanarayana was installed during the reign of Maharana Bhimasimha.

TAMIL NADU

32. INSCRIPTIONS FROM AVALUR, KAMBARAJAPURAM AND MADUR, DISTRICT CHINGELPUT.—A hero-stone inscription found at Avalur is assignable to the sixteenth-seventeenth century A.D. Another inscription in Tamil is reported from Kambarajapuram is attributed to the thirteenth-

fourteenth century A.D. The third one, located on the top of the Madur-malai, contains three lines in Telugu characters of the.sixteenth-seventeenth century A.D.

33. THREE HERO-STONE INSCRIPTIONS, , VEDARTATTAKKAL, DISTRICT DHARMAPURI.—The earliest of these epigraphs in Vatteluttu characters of the seventh century, set up in a field at Vedartattakkal, near Santhur village, is dated in the seventh regnal year of the Pallava king Mayi[n]diraparumar (i.e. Mahendravarman I); it records the death of a servant (name not clear) of Perumban-ilavaraisar. The other two Tamil inscriptions in Vatteluttu characters of the seventh-eighth century A.D., erected in an open field at Vedartattakkal, are dated in the thirty-fifth regnal year of Kattinaiparurmar, They record the death of two servants of Perumban-ilavaraisar along with a person called Valangiyar, when he attacked a village in Puramalai-nadu from Perumugai of Velal-nadu.

34. MISCELLANEOUS INSCRIPTIONS, DISTRICT KANYAKUMARL—Of the six inscriptions, reported from different parts of Vilvancode Taluk of the District, the first one is on a slab fixed in the Vathilmadam and on *kumuda* of inner *prakara* wall in the Prathasarathy temple in village Arudesam. The inscription in Vatteluttu characters appears on *the pitha* of the *dvarapalas* and on the walls of the entrance porch in the Malaikoil at village Arumana. Two inscriptions, one On the Chuttambalam of Alwarkoil at village Eraniel and the other on the *kumuda* of the Srikoil of the Karakudesvaran temple, at village Kadiapattanam were found. The fifth one, reported from village Vilavancode I, is inscribed in Vatteluttu characters on the *kumuda* of the Tripalankadu temple. An inscription from the Vishnu temple at Nattalam contains eighteen lines in old Malayalam script.

Of the three inscriptions from Kalkulam Taluk, the one in Vatteluttu characters has been noticed on the *tripatta-kumuda* of the Srikoil of Keralesvaran temple at Thackalay. The second inscription appears on the *kumuda* of the Adikesavaperumal temple at Thiruvattar, while the last one is found on the *pattika* of the *namaskara-mandapa* of the Tirunandikara temple at Triparappu.

35. PLOUGH INSCRIPTION, MADRAS, DISTRICT MADRAS.—This Tamil inscription, now in the Santi Sadan Trust, Madras, is engraved on an ornamental plough, designated as *melikkodi*. Ascribable to the sixteenth century A.D., it records the assignment of income from a cess to be collected at stipulated rates from among themselves by the Periyanattavar of A-Tondai-mandlam to Kachchipandaram of the Periyanattu-madam at Kanchipuram.

36. HERO-STONE INSCRIPTIONS, DISTRICT NORTH ARGOT.—Six hero-stones, noticed at Edapparai, Momarattur and Palankatton villages in Polur Taluk, arc inscribed in the characters of the late Pallava and Chola periods. A damaged Tamil inscription in Tamil characters of the ninth century A.D., set up in a field at Reddiyapalayam, on the right bank of the Pamban river, is dated in the twentieth, regnal year of the Chola king Rajakesarivarman and mentions Vanako-Vettuv-adi-araisan.

37. MISCELLANEOUS INSCRIPTIONS, DISTRICT NORTH ARCOT.—While removing accretionary wall on one of the pillars of the cave, an inscription in Tamil characters of late Chola period has come to light at Siyamangalam. Eight inscriptions, in early Tamil characters, have been found engraved on the rocks of the hill slopes near Tanipadi, within the boundaries of the Reserved Forest. Near Pakirpalam, a hamlet of Vellore near Tanipadi, an inscription in Tamil characters was noticed in the fields where a temple is believed to have once existed. Inscriptions in Tamil and Grantha characters of late Vijayanagara period were noticed on the walls of the Alganatha and Adhotesvara temples at Periyapattai village in Vaniyambadi Taluk.

Tamil inscriptions, ascribable to about the sixteenth century A.D., were noticed at Andalpur, Gudalur and Madavilgam.

38. KONGU-CHOLA INSCRIPTION, INCUR, DISTRICT PERIYAR.—This Tamil epigraph in Tamil characters of the twelfth century A.D., now preserved in the Kalaimagal Kalvi Nilayam at Erode, dated in the seventh regnal year of Kulottungachola records the setting up of the image of (Ay)yanar by Pottan Seyyan *alias* Kolottungap-pallavaraiyan belonging, to the group of Kavilan-Kurumbillar at Ingaiyur in Melkaraip-Pundurai-nadu.

39. TAMIL INSCRIPTION, PIDARIYUR, DISTRICT PERIYAR.—Engraved on the *adhishthana* of the *mandapa* in front of the central shrine of the Tirumugamalarndanathar temple, this inscrip tion, in. Tamil characters of the fourteenth century A.D., refers to Kamalalaiyar, Tirumugam Alandar, Kali, Kamalisar and Chenninadar as guardian deities respectively of the places described as Kamalapuram, Tiruvirundapuram, Kali-nagar and Chenni-nagar,

40. TAMIL INSCRIPTION, AMMANKOYILPATTI, DISTRICT SALEM.—This Tamil inscription engraved on a rocky outcrop in the locality called Teppali records the excavation of a spring near it by Viyakkan Kopan Kanadevan, probably the son of [Va]ra[am]ban, the *kilar* of Ko[ku]r. It is written in the Tamil characters of the fourth-fifth century A.D.

41. TAMIL INSCRIPTION, MARAMANGALAM, DISTRICT SALEM.—This inscription in Tamil characters and language of the thirteenth century A.D., on a slab set up near a Siva temple, records an order issued in the name of Tandisuvaran (i.e. Chandesvara) making a gift by the *Akasa-kamalam-attamasiddhi-ponar* and by the *Desantiris, Kovanar, mattagam-vetti, kudal-pirigal, Kavarippinnakar, porkqyil-kaikkolar, pichchimar,* the *tanattar* of *Pala-mandalam* to the deities Panaiyisuramudaiyar and Marisuram-udaiyar.

42. TAMIL INSCRIPTIONS, NAMAKKAL, DISTRICT SALEM.—Inscriptions, assignable to the Nayaka period, were noticed over the large panels on the rock while removing the stone-built accretionary steps leading to the main shrine from the *mandapa.*

43. KONGU-CHOLA INSCRIPTION, PATTANAM, DISTRICT SALEM.—This Tamil inscription is engraved on a. rock called Vavvalkuradu, near the Alagunachchiyar temple at Alattur, near the village. Engraved in characters of the thirteenth century A.D. and dated in the sixth regnal year of Virarajendra, it records the grant of ten *kalani* of land to the deity Isanadevar-nayanar of Alattur by Nanganmar *alias* Solakon, a *rnudali* of Solangadeva of Ponparappi in Sela-nadu, for the merit of the latter.

44. KONGU-CHOLA INSCRIPTION, RASIPURAM, DISTRICT SALEM.—This inscription, engraved in Tamil characters of the thirteenth century A.D. on a stone set up in front of the Pon-Varadara-japerumal temple dated in the fourteenth regnal year of Rajaraja, refers to the setting up of *vira-pattanak-kal* granting all the provisions to the *nagarattar* of Rasupuram by Virapedaniraviyar of Pala-*mandlam.*

UTTAR PRADESH

45. BRICK INSCRIPTION, BRINDABAN, DISTRICT MATHURA.—A single-lined inscription, in Brahmi characters of the third-second century B.C., was found on a brick which formed part of a brick structure exposed on the northern slopes of the mound; over it is built the Madan Mohan

temple. It reads *Thana bhagavata nanatakena kartiam,* thus testifying to the existence of the Bhagavata cult at that time in. the Mathura region. Another brick, of the same structure, bears an identical inscription but with only five extant letters.

46. K.USHANA INSCRIPTION, GOVINDNAGAR, DISTRICT MATHURA.—Engraved in Brahmi characters and in. an admixture of Prakrit and Sanskrit languages of the first-second century A.D. this inscription, now preserved in the State Museum, Mathura, records the installation of an. image of Buddha Amitabha in the twenty-fifth regnal year of the Kushana ruler Maharaja Huvishka. The date mentioned in the inscription confirms the assumption of scholars that Vasishka and Huvishka ruled jointly from the year 24 to the year 28 *(contra Bulletin of Museums and Archaeology in U.P.,* nos. 17-18, p. 10, where the regnal year has been read as twenty-eight). This inscription also confirms another assumption that the cult of the Dhyani-Buddhas, of whom Amitabha is one, must have originated around the beginning of the Christian era.

47. BRAHMI INSCRIPTION, MATHURA, DISTRICT MATHURA.—The inscription, engraved on two pieces of a broken decorated frieze of red sandstone is originally from Mathura but now kept in the National Museum, New Delhi. Written in Brahmi characters and in an admixture of Prakrit and Sanskrit languages, it is assignable to the first century B.C. It records the donation of the frieze to a religious structure built by *Kasiputra* Yasaka, the *pithamarda* of the king Gopalya-putra Suryamitra, who may be identified with king Suryamitra, whose coins have been disco vered in the Mathura and Kausambi regions *{contra,* Bela Lahiri, *Indigenous States of Northern India,* 1974, pp. 102 and 153-154, where only a part of the text is given and the interpretation is also defective).

WEST BENGAL

48. CHARTER OF SASANKA, EGRA, DISTRICT MIDNAPORE.—This copper-plate, issued while *Parama-mahesvara* Sasanka was ruling and addressed to the officers of the Ekatakaksha-*vishaya* records the creation of a perpetual endowment of land in Kapardipadraka to be brought under . the plough in order to provide maintenance of Bhatta Damasvamin of the Kausika-*gotra* by *Antaranga* Doshatumga, for the merit of his parents and himself.

ARABIC AND PERSIAN INSCRIPTIONS[1]

ANDHRA PRADESH

1. INSCRIPTIONS OF ASAF JAHIS, DISTRICTS KARIMNAGAR AND NIZAMABAD.—An inscription, dated A.H. 1209 (A.D. 1794-95), on a gun, of the time of Mir Nizam AH Khan Bahadur (Asaf Jah II), from Karimnagar, gives the name of the manufacturer Musa and the supervisor Faujdar Khan.

An epigraph of the time of the seventh (and the last Nizam) Nawwab Mir Uthman Ali Khan Bahadur from Nizamabad records the construction of the tomb of Hadrat Sayyid Shah

---

information from Shri N.M. Ganam, Shri Ganam assisted by Sarvashri M.F. Khan, S.S. Husain, Dr M.Y. Quddusi and Shri M.I. Quddusi found, copied, examined and reported on two hundred and three inscriptions during the year. Information from *: 5,* Director, Archaeology and Museums, Government of Karnataka ; 13 and 14 the Northern Circle of the Survey ; and the rest, Superintending Epigraphist for Arabic and Persian Inscriptions of the Survey.

Amanullah Husaini in A.H. 1346 (A.D. 1928) through the efforts of Buhlul Shah, the Sajjada of the *dargah.* It gives the dates of the birth and the death of the saint as A.H. 890 (A.D. 1485) and A.H. 1162 (A.D. 1748-49) respectively. This would give the saint a life-span of 272 years, and this is rather unusual.

DELHI

2. INSCRIPTION OF THE SURS, DELHI.—The published inscription of Islam Shah, from Khari Baoli, Delhi, believed to be untraceable (as the *Baoli* has been built over), was found in the Faid-i-Ilhiwali Masjid on the Asaf Ali Road in the same city. It records the construction of a well in A.H. 952 (A.D. 1545-46) by Malik Imadul Mulk *alias* Khwaja Abdullah (son of) Ladan Quraishi (cf. *Atharus Sanadid,* Delhi 1965, pl. 34, pp. 422 and 452).

GUJARAT

3. INSCRIPTIONS FROM DISTRICTS MAHESANA, RAJKOT, SURAT AND SURENDRANAGAR.—A hitherto unnoticed inscription of Ahmad Shah I (A.D. 1411-1442) was found at Khakhrechi, District Rajkot. It records the construction of a Jami mosque by Amir-i-Muazzam Haji Shaikh (pl. XXV A). A damaged but interesting epigraph from the same place records the demise in A.H. 956 (A.D. 1549-50) of Qadi Ismail, son of Tahir, son of Akbar az-Zubairi (?) who is mentioned as the governor of ' this city of Amiyabad' by which name Khakhrechi was evidently christened during the Sultanate period.

At Visnagar, District Mahesana, were found some epitaphs in the typical calligraphical style of Cambay. The earliest of these, a badly-damaged one, seems to record the demise of one Musa, son of Nuh in A.H. 786 (A.D. 1384). Another epitaph records the death of Shaikh Hasan, son of Ibrahim, who is a son of Muhammad Mokhatsin A.H. 841 (A.D. 1437); the year is given in figure—perhaps the earliest example in inscriptions from Gujarat. Yet another epitaph from the same place records the death in A.H. 901 (A.D. 1495) of a person, evidently of Arab stock, namely Sayyid Aidrus, son of Salim, son of Shaikh Abu Bakr, son of Salim. In one such death-record, the panel containing the name and the date seems to have been levelled out; it appears to belong to the fifteenth century. A badly-damaged record dated A.H. 924 (A.D. 1518) recording probably the name of the saint in whose *dargah* it is found, was copied from Bhatasan in the same District. Two inscriptions, one of them bilingual, from Visnagar records the construction of a gateway in v.s. 1808, A.H. 1165 (A.D. 1751-52) by Zorawar Khan who belonged to the family of the Nawwabs of Radhanpur. An epigraph in Arabic verse, recording the construction of a mosque in A.H. 1233 (A.D. 1817-18) during the time of Maulana Izzud-Din (a Daudi-Bohra head of the local community) was also found here. One more epitaph from Visnagar informs that the deceased Mirza Ahmad, son of Hatim Khan, who obtained martyrdom in A.H. 1179 (A.D. 1765) was an inhabitant of the province of *(suba)* of Khurramabad in Iran, thus indicating the continuance of intercourse between the two countries at this late date also.

A bilingual epigraph, in local dialect (Gujarati) dated v.s. 1599 (A.D. 1543), and Arabic, was found at Dasada, District Surendranagar. It records the construction of a mosque by the great Malik Alahdad and mentions the mason (?) Jivanji Karamji in the Nagari version and the scribe Maulana Siddiq in the Arabic text.

According to an inscription, from Kathodara, District Surat, which is remarkable for its beautiful Nastaliq calligraphy, a *sarai* was constructed in A.H. 1133 (A.D. 1720-21) by Sirajud-Din for the comfort of travellers of the land and the sea.

HARYANA

4. MUGHAL INSCRIPTION, SIRSA, DISTRICT SIRSA,-names and title of Shah Jahan was found here, -A fragmentary record bearing the

KARNATAKA

5, PERSIAN INSCRIPTION, GANJAM, DISTRICT MANDYA.—Found in the premises of the tomb of Langde Ghulam Ali, this epitaph records the grant of eight hundred square measures of land in. the neighbourhood of village Chandgal, for the purpose of the Muslim cemetery of Tipu Sultan. It also informs that Chandgal was in *Rakhte-Nazar* during Tipu's time. The date is mentioned in the Hijri, Mouloodi and the cyclic year: Tuesday fifth, Rabiussani of 1207 Hijri corresponding to Mouloodi year 1221 and the cyclic year Sahr which correspond to 20 November 1792.

MADHYA PRADESH

6. INSCRIPTION, SIRONJ, DISTRICT VIDISHA.—The text of the inscription forms the chronogram stating that the mosque was built by Abdut-Tayyib with the support of Salih Muhammad, in A.H, 1196 (A.D. 1781-82).

MAHARASHTRA

7. INSCRIPTION, AURANGABAD, DISTRICT AURANGABAD.—A comparatively modern, inscrip tion, set up on the door of the tomb of Rabia Daurani, states that (this) copy of the ancient art of Iran is the work of the students of the School of Art and Craft, Aurangabad.

8. INSCRIPTION, AURANGABAD, DISTRICT AURANGABAD.—It records the construction of a mosque by one Musa Khan (see no. 12 below) in A.H. 1079.

9. INSCRIPTION, GANGAPUR, DISTRICT AURANGABAD.—This inscription records the construction of a mosque by Hadi in A.H. 1102 (A.D. 1690-91).

10. BAHAMANI INSCRIPTION, KHULDABAD, DISTRICT AURANGABAD.—A fragmentary record of Alaud-Din Ahmed II (A.D. 1436-58) mentions Parwiz, the deputy (?) of the king, whose inscriptions have been traced in the surroundings of Khuldabad and Kaghzipura *(Ep. Ind. Ar. Pers. Sup.,* 1964, pp. 38 and 39) (pl. XXV B).

11. MISCELLANEOUS INSCRIPTIONS, KHULDABAD, DISTRICT AURANGABAD.—An epigraph assigns the construction of a mosque to Sadiq in A.H. 1078 (A.D. 1667-68). According to a damaged inscription from Khuldabad the tomb of Mah Begam, a disciple of Banda Nawaz, was built in A.H. 1134 (A.D. 1721-22). Another epitaph from the same place mentions Sayyida Begam, a servant *(khadima,* disciple) of Banda Nawaz Gaisu Daraz Husaini.

12. MUGHAL INSCRIPTION, KHULDABAD, DISTRICT AURANGABAD.—An inscription belonging to the reign of Aurangzeb states that a mosque was constructed in the enclosure of the tomb of the saint Jalalul-Haq, in A.H. 1081 (A.D. 1670-71) by Musa Khan, out of his own money.

UTTAR PRADESH

13. MUGHAL INSCRIPTION, CHHIPITOLA, DISTRICT AGRA.—This inscription, dated A.H. 966 (A.D. 1558), occurs on the tombstone of' a saint Mir Qutbi, son of Shah Qabul. The tombstone stands in an enclosure facing the *hammam* of Ali Vardi Khan, a courtier of the Emperor Jahangir.

14. MUGHAL INSCRIPTION, JAWAHAR-KA-NAGLA, DISTRICT AGRA.—An _ inscription in Persian and Nastaliq characters on the intrados of the dome of the tomb of Mir Abdullah Tirmizi, the poet-laureate and a noted calligrapher of the Emperor Jahangir, records the cons truction of the tomb during Jahangir's reign in A.H. 1335 (A.D. 1626).

15. EPITAPHS, JAUNPUR, DISTRICT JAUNPUR.—These epitaphs supply dates and names of the deceased who were once men of note in their days. Some of the deceased mentioned are: Mir Dost Ansari who died in A.H. 968 (A.D. 1561); Husain Ali who expired in A.H. 1142 (A.D. 1729); Purdil Khan who achieved martyrdom in A.H. 1148 (A.D. 1735-36) and was buried in the Panja graveyard; and Makhdum Inayat, a saintly person, who died in A.H. 1256 (A.D. 1840-41).

16. EPITAPHS, AMROHA, DISTRICT MORADABAD.—One of the records states that Nawwab Darwish Ali Khan Bahadur obtained martyrdom in the battle against the Barhas (Sadat-i-Barah) in A.H. 1131 (A.D. 1718). He is stated to have held the post of Deputy Mir-Bakhshi and post of Ard-i-Mukarrari under Muhammad Farrukh Siyar (A.D. 1712-19) and Muhammad Shah Bahadur (A.D. 1719-48). It also states that the whole *pargana* of Amroha was allotted in his *jagir* to meet the expenditure on his kitchen. The text further mentions that the grave on his right side is that of his eldest son Ghulam Muhyiud-Din Khan entitled Darwish Ali Khan-i-Thani (i.e. the second), and on his left is of his second son Muhammad Fakhrud-Din Khan, both of whom achieved martyrdom in A.H. 1152 (A.D. 1740) in the battle against Nadir Shah of Persia, while the grave at the foot-side outside the tomb is that of his youngest son named Muhammad Shamsud-Din Khan who expired in A.H. 1208 (A.D. 1794). Two inscrip tions record the death of Saadat Ali who was well versed, in various disciplines such as art of writing, poetry, medicine, etc. in A.H. 1296 (A.D. 1879).

17. INSCRIPTION, MUGHALPUR-AGWANPUR, DISTRICT MORADABAD.—It assigns the construction of a mosque to Shaikh Habibullah in A.H. 1107 (A.D. 1695-96).

18. INSCRIPTION, SIRSI, DISTRICT MORADABAD.—According to this record a mosque was constructed in A.H. 1194 (A.D. 1780) at the instance of Nawwab Burhanud-Daula Bahadur Bahram Jang under the supervision of his servant Chattu Khan.

19. MUGHAL INSCRIPTION, UJHARI, DISTRICT MORADABAD.—A damaged inscription of Akbar records the construction of the tomb of Hadrat Shaikh Daud.

20. INSCRIPTIONS, ISAULI, DISTRICT SULTANPUR.—An inscription, set up in A.D. 1910, states that the Jami mosque, originally constructed in A.H. 1056 (A.D. 1646-47) by Shamsi Beg was renovated by Akbar Yar Khan. Two inscriptions of identical purport, state that the tomb of the saint Sayyid Ashraf Jahangir Samanani who died in A.H. 808 (A.D. 1405) was constructed *in* A.H. 1066 (A.D. 1655-56); they also describe Muhammad Ashrafi al-Husaini as the *Mujavir* of this tomb and mention the place as Ashrafabad.

III. NUMISMATICS AND TREASURE TROVE[1]

ANDHRA PRADESH

1. SILVER COINS, DISTRICT ADILABAD.—Twenty silver coins were acquired as treasure trove,

2. GOLD GOINS AND UNCUT DIAMONDS, DISTRICT ANANTAPUR.—Eighty-four gold coins and two uncut diamonds were found as treasure trove.

3. SILVER COINS, DISTRICT KARIMNAGAR.—Eight silver coins were acquired as treasure trove.

4. GOLD COINS, DISTRICT KHAMMAM.—One hundred thirty-one gold coins were obtained as treasure trove.

5. COINS, DISTRICT MEDAK.—One broken gold and fifty-two silver coins were found as treasure trove.

6. COINS, DISTRICT NALGONDA.—Six hundred runty-two silver and one hundred and seventeen copper coins were found as treasure trove.

7. GOLD COINS, DISTRICT NELLORE.—Three gold coins were obtained as treasure trove.

8. SILVER COIN, DISTRICT RANGAREDDY.—One coin, in two pieces, was recovered from this District.

9. SILVER COINS, DISTRICT WARANGAL.—Twenty-nine silver coins were found as treasure trove.

DELHI

10. MUGHAL COINS, RED FORT, DELHI.—Twenty-three silver coins of Shah Alam were found. The issues bear the legend *Alah Muhammad Alam Shah Fazal-i-Khami Din* and dated A.H. 1200 on the obverse and the name Shahajahanabad on the reverse.

GUJARAT

11. STONE SCULPTURE, CHHABASAR, DISTRICT AHMADABAD.—An image of Vishnu, belonging to *circa* thirteenth century, was acquired.

---

1 Information from : 1-9 the Department of Archaeology and Museums, Government of Andhra Pradesh; 10, Delhi Circle of the Survey, 11-15, the Director of Archaeology, Government of Gujarat; 16-17 and 19 to 29, the Department of Archaeology and Museums, Government of Madhya Pradesh; 18, 30, 31, 33 and 36-37, Prof. Ajay Mitra Shastri, Department of Ancient Indian History, Culture and Archaeology, Nagpur University ; 32, Dr (Mrs) Shobhana Gokhale of the Deccan College Postgraduate and Research Institute, Pune and Prof. Ajay Mitra Shastri of Nagpur University, Nagpur; 34-35 and 38-39, the Central Circle of the Survey; and 40-48 the Department of Archaeology and Museums, Government of Rajasthan,

12. JAINA IMAGES, HATHIJAN, DISTRICT AHMADABAD.—Four images of Jaina *tirthankaras,* in white marble, belonging to *circa* fourteenth century were found.

13. MARBLE IMAGE, PALANPUR, DISTRICT BANAS KANTHA.—Three images of *chamardharini,* of white marble, datable to *circa* twelfth-thirteenth century and an inscribed image of Yaksha Dharanendra(?), of schist, were found. The inscription is dated v.s. 1205 (A.D. 1149).

14. IMAGES, VELVADE, DISTRICT BANAS KANTHA.—Two stone images, one of Chakresvari and the other unidentified, besides other objects, all of marble were acquired under the Treasure Trove Act. These belong to the thirteenth century A.D.

15. SCULPTURE, PALITANA, DISTRICT BHAVNAGAR.—One marble image of Jina-muni, assignable to thirteenth century, was found as treasure trove.

MADHYA PRADESH

16. SILVER COINS, BHIND, DISTRICT BHIND.—One hundred and thirty-six silver coins, belonging to the Mughals, were acquired as treasure trove.

17. SILVER COINS, NEORI, DISTRICT DEWAS.—A hoard of one thousand and sixty-five coins, bearing the name of Shah Alam II was found. On the coins are inscribed the Fasli *samvat* and the ruling years of kings of the Holkar dynasty such as Malhar Rao, Hari Rao and Tukoji Rao.

18. SATAVAHANA COIN, INDORE, DISTRICT INDORE.—One coin of Satavahana king Vasishthiputra Sivasri Pulumavi was identified in the collection of Shri D. L. Johri of Indore.

19. MUGHAL COINS, JAMGAON, DISTRICT MANDLA.—Twenty-four silver coins belonging to Ahmad Shah were acquired as treasure trove.

20. COPPER COINS, GOPALPURA, DISTRICT MANDSAUR.—A hoard of Gadbiya coins of the Malwa and the Gujarat types was acquired and kept in the Indore Museum, Indore.

21. SINDHIA COINS, PACHORI-KA-PURA, DISTRICT MORENA,—A hoard of one hundred and forty silver coins belonging to the Sindhia rulers was acquired.

22. SILVER COINS, KACHNARIA, DISTRICT RAJGARH.—A hoard of nineteen silver coins of the Mughal rulers, namely Jahangir, Shah Jahan, Aurangzeb and Shah Alam I was found at at this place.

23. MUGHAL COINS, TAILIN, DISTRICT RAJGARH.—A hoard of fifty-two silver coins of the Mughal kings Aurangzeb, Bahadur Shah, Faruq Siyar, Muhammad Shah and Alamgir II was discovered.

24. GUPTA COINS, RUNIJA, DISTRICT UJJAIN.—Out of the nine coins, six are of the *dhanudhari* and *simhanihanta* types and belong to Chandragupta II, the remaining three representing standard type of Samundragupta.

25. COINS, UJJAIN, DISTRICT UJJAIN.—During the clearance operation of the Ramjanardan temple-complex, a few silver coins of Holkar period bearing Sun symbol and a legend in Persian were collected.

26. MUGHAL COINS, BADWAHA, DISTRICT WEST NIMAR,—Four gold coins of Aurangzeb and Muhammad Shah and forty-six silver coins bearing the name of Aurangzeb, Alam Shah, Farrukh Siyar, Rafiud-darajat, Muhammad Shah and Shah Jahan II were collected from Badwaha.

27. SILVER COINS, MAHESHWAR, DISTRICT WEST NIMAR.—A hoard of forty-one coins of Malhar Rao, Hari Rao and Tukoji Rao of the Holkar State had been found.

28. GUPTA COIN, NARAVALA, DISTRICT WEST NIMAR.—One gold coin of the standard type of Samundragupta was found,

29. SILVER COINS, SANAVAD, DISTRICT WEST NIMAR.—Seventy-two silver coins, bearing the name of king Shah Alam II, and recording the Fasli *samvat* and ruling years of the Holkar kings were found.

MAHARASHTRA

30. COPPER COINS, KHOLAPUR, DISTRICT AMARAVATI.—One coin each of the Indo-Sassanian, Bhonslas of Nagaur, besides a copper coin of Akbar and some of the Shahi kings, were, noticed in the possession of a villager at Kholapur.

31. PADMATANKAS OF YADAVAS OF DEVAGIRI, AURANGABAD, DISTRICT AURANGABAD.-—In the coin-collection of Dr S. G. Purwar, some gold-plated brass coins belonging to the Yadavas of Devagiri were noticed.

32. SATAVAHANA COINS AND TERRACOTTA MOULD, PAITHAN, DISTRICT AURANGABAD.—One lead coin of Gaja-Lakshmi type with the legend *Siri Satakarni* ascribable to Satakarni II, three portrait coins of Gautamiputra Satakarni, and a terracotta mould containing the negative of the obverse of the three coins with clear legend 'Yajnasri' were noticed during explorations. One terracotta mould containing the positive impression of the reverse of a silver coin of Vasishthiputra Pulumavi was identified in the collection of Shri Balasahib Patil.

33. SILVER COIN OF YADAVAS OF DEVAGIRI, DISTRICT RATNAGIRI.—Fourteen silver coins belonging to the Yadavas of Devagiri, with the legend in Nagari characters on the reverse and lion facing right or left on the obverse, were identified in the coin-collection of Shri K. K. Maheshwari of Bombay. The kings represented are Bhillama V, Singhana and Ramadeva.

34. MUSLIM COINS SINDHKHED RAJA, DISTRICT BULDHANA.—Two Muslim copper coins were found at Sindhkhed Raja.

35. COPPER COINS OF SHAH ALAM, MENDKI, DISTRICT CHANDRAPUR.—One copper coin of Shah Alam was found from the place.

36. COPPER COINS, NAGPUR, DISTRICT NAGPUR.—Two copper coins of Damabhadra were noticed in the collection of Shri Raghunath Sanghi of Nagpur. Damabhadra of this coin possibly belongs to the same family as that of Satyabhadra.

37. GOND COINS, NAGPUR, DISTRICT NAGPUR.—Two Gond coins, one, in silver, belonging to Sangram Shah of Garha and the other in copper, belonging to Kokshah II of Devagarh, were found in the possession of Shri Raghunath Sanghi of Nagpur.

38. GOLD COINS, KANDHAR, DISTRICT NANDED.—Twenty-two gold coins of the Mughals and the East India Company were found from Kandhar.

39. COINS, AJHANERI, DISTRICT NASIK.—TWO worn-out copper coins belonging to the Muslim rulers were found.

RAJASTHAN

40. GADHIYA COINS, MASUDA, DISTRICT AJMER,—The Government Museum, Ajmer, received ninety silver -Gadhiya coins as a gift from the Panchayat Samiti, Masuda.

41. COPPER COINS, GWALINI, DISTRICT JAIPUR.—One hundred and twelve Adivaraha copper coins, datable to *circa* twelfth century, were acquired as treasure trove.

42. COPPER OOINS AND SEALS, JAMVA-RAMGARH, DISTRICT JAIPUR.—Two hundred and ninty-seven copper coins belonging to the Kushanas and two seals belonging to the Jaipur State were acquired as treasure trove.

43. MUGHAL COIN, LAVAN, DISTRICT JAIPUR.—One silver coin of Shah Jahan was found from Lavan.

44. COPPER COIN, MAHUA, DISTRICT MADHOPUR.—One copper coin assignable to the medieval times was found from Mahua.

IV. OTHER IMPORTANT DISCOVERIES

ANDHRA PRADESH

1 KARTTIKEYA IMAGE, CHEJERLA, DISTRICT GUNTUR.—Dr I. K. Sarma of the Temple Survey Project, Southern region, of the Survey, noticed in a medieval temple over a hillock near Kapotesvarasvami temple, a unique limestone image of Karttikeya (pl. XXVI A) measuring l-25m x 47 x 12 cm. The deity stands in *samapada* posture over a lotus and holds a *trisula* with *musala* at the bottom in the right hand and a *kukkuta* in the left.

DADRA AND NAGAR HAVELI

' . 2- MICROLITHIC SITE IN THE UPPER DAMAN GANGA RIVER, DADRA AND NAGAR HAVELI — Shri K. Raghavachary assisted by Shri S. S. Nayak of the Western Circle of the Survey explored the Madhuban Dam upper and lower regions up.to Dadra and observed that entire area was disturbed due to construction of the Dam. However, a few microlithic cores were picked up,

GUJARAT

3. SCULPTURE AND ANTIQUITIES, SATHAL, DISTRICT AHMADABAD.—Dr K. N. Momin of the M. S. University of Baroda, discovered a stone sculpture of Lajjagauri, besides ceramics and bricks of early historical and medieval periods.

4. SCULPTURES, ADALAJ, DISTRICT GANDHINAGAR.—-TWO sandstone Matrika images of , post-Gupta period and stone head of a Jaina *tirhankara of circa* fourteenth century A.D. were noticed by the Department of Archaeology, Government of Gujarat.

5. HARAPPAN SEAL, DHOLAVIRA, DISTRICT KUTCH.—The Department of Archaeology Government of Gujarat, collected from the Harappan mound a broken seal which is significantly made of sandstone.

6. STEP-WELL, BILLIA, DISTRICT MAHESANA.—An eighteenth century step-well, containing several medieval images of Hindu pantheon, and inscriptions of eighteenth-nineteenth century were discovered by Shri P. K. Trivedi of the Western Circle of the Survey.

7. SCULPTURES, SIDHPUR, DISTRICT MAHESANA.—Shri P. K. Trivedi of the "Western Circle of the Survey, discovered sculptures of Hindu and Jaina pantheons, assignable variously from the tenth to eighteenth century A.D., and an inscribed brass image of Vishnu, dated Samvat 1485 (A.D. 1429).

8. MEDIEVAL STRUCTURAL REMAINS, PAVAGADH HILLS, DISTRICT PANCH MAHALS.—The Department of Archaeology, Government of Gujarat, noticed medieval structures during the clearance of a step-well locally known as Gebansha-ni-Vav. Other finds include pot-sherds of plain black, red and glazed wares, iron nails and stone wares, all belonging to the medieval times.

9. SCULPTURES AND MEMORIAL STONES, DISTRICT SURAT.—Shri S. S. Nayak of the Western Circle of the Survey, noticed an image of Hanuman of the sixteenth century A.D., and memorial

stones belonging to seventeenth-eighteenth century A.D. at Lotarwa, Patakwadi and Wanderdeve.

10. METAL IMAGES, BEHRA, DISTRICT SURAT.—Shri K. Raghavachary, assisted by Shri S. S. Nayak of the Western Circle of the Survey, noticed metal images of Krishna, Murali-Krishna, Lakshmi-Narayana, Siva and Parvati, all assignable to *circa* eighteenth-nineteenth century A.D. and ranging in height from 7-5 to 15 cm.

11. MEDIEVAL SITE, CHAMPAWADI, DISTRICT SURAT.—Shri S. S. Nayak of the Western Circle of the Survey, discovered a medieval site yielding sherds of black and red wares and two copper coins of the Sultans of Gujarat.

12. EARLY HISTORICAL SITE AND MEMORIAL STONES, KALAVVRA, DISTRICT SURAT.—Shri S. S. Nayak of the Western Circle of the Survey, discovered an early historical site on the southern bank of the river Tapti, yielding red and black wares and four memorial stones assignable to *circa* seventeenth-eighteenth century A.D.

13. MEDIEVAL SITE AND MEMORIAL STONES, PADAMDUNGARI, DISTRICT SURAT.—Shri S. S. Nayak of the Western Circle of the Survey, noticed a medieval site and two memorial stones.

14. HARAPPAN SITE, VANTA VASH, DISTRICT SURENDRANAGAR.—Shri S. R. Rao of the Western Circle of the Survey, assisted by Shri K. D. Tripathi, located a Harappan site which yielded buff ware, dish-on-stand, painted black-and-red ware and black ware, apart from core material in chalcedony and jasper.

15. GANESA IMAGE, DABHOI, DISTRICT VADODARA.-—Shri P. *K.* Trivedi of the Western Circle of the Survey, recorded a stone image (in two pieces) of Ganesa, of area eleventh century A.D., which was brought to light while digging the foundation of a temple.

16. SCULPTURES AND MEMORIAL STONE, VADODARA, DISTRICT VADODARA.'—Sarvashri R. D. Singh and P, K. Trivedi of the Western Circle of the Survey, noticed the bust of a four-armed female deity, assignable to *circa* eleventh-twelfth century A.D., a memorial stone dated A.D. 1478, and a four-armed image of Parvati of late eighteenth century A.D., at the residence of Shri S. K. Chaudhary, Collector, Vadodara.

17. SCULPTURES, VAGHODARA TALUK, DISTRICT VADODARA.—The Department of Archaeology, Government of Gujarat, found the following sculptures in the course of village-to-village exploration.

Village	*Sculpture*	*Period*
Alva	Ganesa, Mahishasuramardini and Hanuman	Seventeenth-eighteenth century A.D.
Amodar	Memorial stones (three)	-do-
Asoj	Brahmani	Eighth century A.D.
	Memorial stones (two)	Twelfth-thirteenth century A.D.
	Mahishasuramardini, Brahma	Fifteenth century A.D.
Bakrol	Memorial stones (eight)	Eighteenth-nineteenth century A.D.
	Ganesa	-do-

Village	*Sculpture*	*Period*
Bhadol-khurad	Memorial stones (four)	Seventeenth century A.D.
Bhamiyara	-do- (five)	Seventeenth-eighteenth century A.D.
Bhavpura	Ganapati	Eighteenth century A.D.
Boridra	Memorial stones (three)	Sixteenth-seventeenth century A.D.
	Hanuman and Jaladhari	Eighteenth century A.D.
Chipad	Memorial stones (three)	Thirteenth-fourteenth century A.D.
Jafarpura	Memorial stone	Seventeenth century A.D.
Jarod	Mahishasuramardini	Tenth-eleventh century A.D.
	Memorial stone and Nandi	Sixteenth century A.D.
Khandivada	Head, torso and memorial stone	Twelfth-thirteenth century A.D.
	Nandi and Jaladhari	Fourteenth-fifteenth century A.D.
Lilora	Siva-Parvati	Ninth-tenth century A.D.
	Mahishasuramardini	Twelfth century A.D.
	Memorial stones (three) and architectural remains	Twelfth-thirteenth century A,D.
	Nandi	Fourteenth century A.D.
	JaJadhari and Hanuman	Seventeenth-eighteenth century A.D,
Morlipura	Memorial stones (two)	Eighteenth century A.D.
Navi Jambuvai	Memorial stone	Seventeenth century A.D.
Nimetha	Memorial stone and Ganapati	Eighteenth-nineteenth century A.D.
Paldi	Memorial stones (five)	Seventeenth century A.D.
	Nandi and Jaladhari	
Rahkui	Memorial stones (three)	Seventeenth century A,D.
Rajpura	Memorial stones (two)	Seventeenth-eighteenth century A.D.
Rasulabad	Memorial stones (three)	Thirteenth century A.D.
	Vishnu	Fourteenth-fifteenth century A.D.
	Yogini	Sixteenth-seventeenth century A.D.
	Nandi	Sixteenth century A.D.

HARYANA

18. SCULPTURES, PEHOWA, DISTRICT KURUKSHETRA.—The Department of Archaeology, Government of Haryana, discovered five sculptures belonging to the Pratihara period.

JAMMU AND KASHMIR

19. MEDIEVAL MOUNDS AND MOSQUE, DISTRICT JAMMU.—The North-Western Circle of the Survey, noticed mounds of medieval period at Bakor, Devipura, Nutthi, Maisa and Troti, apart from a mosque *of circa* nineteenth century A.D. at Akhnoor.

KARNATAKA

20. NEOLITHIC SITE, BANGALORE, DISTRICT BANGALORE.—Shri M. V. Visvesvara of the Mid-Southern Circle of the Survey, collected a few neolithic axes near the locality known as Muthyala Maduvu.

21. NEOLITHIC SITE, RANGAPURAM, DISTRICT BELLARY.—Sarvashri D. B. Krishna and G. B. Patil of the Mid-Southern Circle of the Survey, collected neolithic tools from a site on the bank of the river Tungabhadra.

22. MEDIEVAL TEMPLE, BELUR, DISTRICT BIJAPUR.—Shri G. C. Chauley of the Mid-Southern Circle of the Survey, noticed a temple of *circa* eleventh-twelfth century A.D., dedicated to Brahma and Mahishasuramardini.

23. TEMPLES, SCULPTURES AND INSCRIPTIONS, SOMAPURA, DISTRICT CHIKMAGALUR.—The Department of Archaeology and Museums, Government of Karnataka, noticed a temple dedicated to Somesvara, five sculptures and three inscriptions at Somapura and a temple dedicated to Gopal-Krishna and a few sculptures at Gopala in the Tarikere Taluk.

24. MEGALITHS, DISTRICT CHITRADURGA.—The Department of Archaeology and Museums, Government of Karnataka, in the course of exploration in the area of Kamaranahalli of the Herihar Taluk of the District and noticed remains of twelve megalithic burials. Out of them, seven are of cairn-circle type. The surface finds include pot-sherds of Black-and -red Ware, red and black wares. Some of the sherds show graffiti marks.

25. LEAD INGOTS, SINDHANUR, DISTRICT RAICHUR.—Shri D. Hanumantha Rao of the South-Eastern Circle of the Survey, inspected ninety-six lead ingots weighing 1081 kg, recovered by the local people from a medieval fort site. They are cut into irregular shapes and bear on the exterior various symbols, crests, English alphabets and numerals.

26. NEOLITHIC SITE, MELKOTE, DISTRICT MANDYA.—Shri M. V. Visvesvara of the Mid-Southern Circle of the Survey, collected neolithic tools and pottery from a locality called Dhanuskote, 2 km south of Melkote.

MADHYA PRADESH

27. TEMPLE, MOHANDEN, DISTRICT DAMOH.—Shri G. L. Raikar of the Department of Archaeology and Museums, Government of Madhya Pradesh, discovered a temple richly decorated with panels of Navagrahas, Saptamatrikas, etc., assignable to *circa* eighth-ninth century A.D.

28. SCULPTURES, BHUNNAS AND WARCHI, DISTRICT HOSHANGABAD.—Medieval sculptures belonging to the Brahmanical pantheon were discovered by Shri K. K. Pandey of the Department of Archaeology and Museums, Government of Madhya Pradesh.

29. ROCK-PAINTINGS, CHURNAGUNDI, DISTRICT HOSHANGABAD.—Shri K. R. Pandey of the Department of Archaeology and Museums, Government of Madhya Pradesh, surveyed a group of prehistoric rock-shelters with paintings depicting hunting scenes in red ochre and white.

30. SCULPTURES, DISTRICT MORENA.—The Central Circle of the Survey, discovered sculptures belonging to the medieval period at Arran, Jotai, Kichol, Orethi and Rithwari.

The Department of Archaeology and Museums, Government of Madhya Pradesh, collected two hundred Brahmanical and Jaina sculptures during debris-clearance at the ancient-site at Doobkund.

31. SCULPTURE, SANCHI, DISTRICT RAISEN.—Shri Naryan Vyas of the Central Circle of the Survey, noticed a mutilated sculpture of Buddha belonging to the Gupta period.

32. CHALCOLITHIC SITE, SHIPAVARA, DISTRICT RATLAM.—KUMARI Bharati Joshi of the Department of Archaeology and Museums, Government of Madhya Pradesh, discovered a chalcolithic site at the confluence of the rivers Chambal and Kshipra,

33. SCULPTURES, DISTRICT SAHDOL.—The Central Circle of the Survey, noticed sculptures belonging to the Kalachuri period at Barbaspur, Bijori, Latar, Padai, Singhpur, Silahra and Sohagpur.

34. MAURYAN FINDS, ASTA, DISTRICT SEHORE.—During the clearance of a temple site, a number of intact earthen posts were found in a well. Sarvashri G. Krishna and R. R. Singh of the Department of Archaeology and Museums, Government of Madhya Pradesh, during the inspection of the site, noticed that one of these pots bore engraving of the letter W in Mauryan Brahmi character.

35. TEMPLE AND SCULPTURES, TELOD, DISTRICT UJJAIN.—Shri Narayan Vyas of the Central Circle of the Survey, discovered a ruined temple and sculptures belonging to the Paramara period.

36. SCULPTURES, UJJAIN, DISTRICT UJJAIN.—A four-armed standing image of Vishnu (pl. XXVI B) and a headless sculpture of Vishnu, both belonging to the medieval period, were discovered from the Kshipra silt by the Department of Archaeology and Museums, Government of Madhya Pradesh.

37. SCULPTURES, CHITORIA, DISTRICT VIDISHA.—The Department of Archaeology and Museums, Government of Madhya Pradesh, discovered a group of Brahmanical sculptures of *circa* eighth-ninth century A.D.

38. MEDIEVAL TEMPLE AND SCULPTURES, TIGRA, DISTRICT VIDISHA.—Shri Narayan Vyas of the Central Circle of the Survey, discovered a ruined early medieval temple with sculptures of seated Surya, Chamaradhari, Uma-Mahesvara, etc.

MAHARASHTRA

39. MESOLITHIC SITE DHAVALPURI, DISTRICT AURANGABAD.—Shri D. M. Kulkarni of the South-Western Circle of the Survey, noticed a Mesolithic site yielding burins, scrapers and flake tools embedded in brown silt and *kankar* deposit.

40. ANCIENT SITE, LENAPUR, DISTRICT AURANGABAD.—Shri Amarendra Nath of the South-Western Circle of the Survey, picked up sherds of the red-slipped ware of the Gupta-Vakataka period and sherds of the burnished black ware of the Maratha period from Lenapur, 1 km east of the Ajanta Caves. Besides, a fragmentary bust of a female deity and a terracotta figure of Ganesa (Maratha period) were also collected.

41. REMAINS OF STUPAS, KONDIVTE, DISTRICT BOMBAY.—Shri M..N. Deshpande of the Nehru Centre, Bombay and Shri G. V. Vidhwans of the Survey, exposed the plan of the three structural stupas at Kondivte cave site: two of them on the top terrace and one in the forecourt of Chaitya cave (no. 8). These remains are ascribable to the Mahayana phase.

42. CULTURAL REMAINS, THANALA, DISTRICT KOLABA.—Shri M. N. Deshpande of the Nehru Centre, Bombay and South-Western Circle of the Survey, exposed and recovered the cultural remains in and near the caves. Cave 3 which has thirteen stupas—six. monolithic, two of rock-cut in niche and five structural—helped in fixing the chronology of the entire group of

caves. Four phases of rock-cut activity from early second century B.C. to the beginning of the first century B.C. have been observed. Corresponding phases of the rock-cut activity were also noticed in Cave 7 {*Vihara)* where the original cave was subsequently enlarged and decorated with sculptural reliefs. In the process of this enlargement, the *stupa* in the centre of the original cave appears to have been removed. Indication of its existence is furnished by the *chhatra* with floral decoration in relief surviving on the ceiling. In the later Mahayana phase the replastering and painting on the walls of the *viharas* were done. A mural, fairly well-preserved in Cave 13, shows a figure in the style of the Vakataka times as found at Ajanta. Important finds from these caves are seven silver punch-marked coins and one terracotta votive stupa from Cave 3, an ivory dice from outside the Cave 7, and an iron spear from Gave 8.

43. STONE AGE SITES, MAHURJHARI, DISTRICT NAGPUR.—Dr Chandrashekhar Gupta of the 'Department of Ancient Indian History, Culture and Archaeology, Nagpur University, noticed Lower and Middle Palaeolithic sites at Mahurjhari, a well-known excavated megalithic site. The Lower Palaeolithic tools, represented only by choppers made on chert, were found in the bed of the nullah flowing through the fields on the north-east of the village, whereas Middle Palaeolithic sites yielding blades, scrapers, flakes and core were found on the left bank of the rivulet flowing on the northern border of the village.

ORISSA

44. JAINA SCULPTURES, AJODHIA, DISTRICT BALASORE.—Shri L. M. Wahal, assisted by Shri A. K. Bandopadhyaya of the Eastern Circle of. the Survey, noticed images of Parsvanatha and Gomedha with Ambika (pl. XXVII A).

45. SCULPTURES, BANKESWAR, DISTRICT BALASORE.—Shri L. M. Wahal assisted by Shri A. K. Bandopadhyaya of the Eastern Circle of the Survey, discovered late medieval stone sculptures of Vishnu, Varaha, Narasimha, Surya and Mahishamardini.

46. SCULPTURES, SASANG, DISTRICT BALASORE.—Shri L. M. Wahal assisted by Shri A. K. Bandopadhyaya of the Eastern Circle of the Survey, found sculptures of Parvati, Ganesa and Vishnu, all of late medieval period.

47. SCULPTURE,, VARDHANPUR, DISTRICT BALASORE.—Shri L. M. Wahal assisted by Shri A. K. Bandopadhyaya of the Eastern Circle of the Survey, noticed late medieval sculptures of Ganesa, Karttikeya, Parvati, Vishnu and Gaja-Lakshmi.

48. SCULPTURES, GUDARI, DISTRICT KORAPUT.—Late medieval sculptures representing Karttikeya, Ganesa, Parvati, Mahishamardini and Gaja-Lakshmi were discovered by Shri L. M. Wahal and Shri A. K. Bandopadhyaya of the Eastern Circle of the Survey.

49. JAINA SCULPTURE, KECHALA, DISTRICT KORAPUT.—In a ruined temple, Shri L. M. Wahal, assisted by Shri A. K. Bandopadhyaya of the Eastern Circle of the Survey, discovered a number of late medieval Jaina sculptures, like Ajitanatha, Vasupujya, Adinatha, Sambhavanatha, Gomedha with Ambika (pl. XXVII B).

50. MEDIEVAL TEMPLE, PRATAPUR, DISTRICT MAYURBHANJ.—Shri S. Kumar of the Eastern Circle of the Survey, noticed late medieval temple known as *Dadhivahana.*

51. SCULPTURE, HIRAPUR, DISTRICT PURL—Sarvashri L. M. Wahal, and A. K. Bandopadhyaya of the Eastern Circle of the Survey, discovered a beautiful Venugopala image in stone, datable to *circa* tenth century A.D.

PUNJAB

52. SCULPTURES, BHATINDA, DISTRICT BHATINDA.—Shri D. R. Gehlot of the North-Western Circle of the Survey, noticed two marble sculptures of Jaina *tirthankaras* bearing a short ins cription dated Vikrama Samvat 1236 (A.D. 1179). These sculptures were found in. a field.

53. ANCIENT SITE AND TANK, SATOJ-SAR, DISTRICT PATIALA.—Sarvashri S. L. Shali, S. N. Jaiswal and G. S. Gaur of the North-Western Circle of the Survey, collected Harappan pottery and sherds of the Painted Grey Ware, black-slipped ware and other red wares generally associated with grey wares, and located an ancient tank measuring 121*92 x 45-72 m belonging to the pre-Kushana age.

RAJASTHAN

54. PAINTED GREY WARE SITES, DISTRICT BHARATPUR.—Shri B. S. Negi of the Delhi Circle of the Survey, explored the Tehsils of Nadbai and Dig and brought to light sites belonging to Painted Grey Ware culture on the bank of river Banganga and its old beds at Unaya, Karon, Paramodara, and Khoh.

55. INSCRIPTION, SHYOPURA, DISTRICT BHARATPUR.—-Shri B. S. Negi of the Delhi Circle of the Survey, noticed an inscription of French General Sabru which is dated *Samvat* 1830 (A.D. 1773).

56. INSCRIPTIONS, DHARATKALAN, DISTRICT CHITTAURGARH.—Shri S. R. Shrimali of the the Western Circle of the Survey, discovered two inscriptions of *circa* eighteenth century A.D.

57. INSCRIPTION, SEMALPURA, DISTRICT CHITTAURGARH.—Shri S. R. Shrimali of the Western Circle of the Survey, noticed an inscription in *nagari* characters of *circa* fifteenth century A.D.

58. COPPER-PLATE INSCRIPTION, BALARAI, DISTRICT PALI.—Shri R. Pathak of the Western Circle of the Survey, found a pair of inscribed copper-plates dated Vikrama-Samvat 1432 (A.D. 1375).

59. MEDIEVAL TEMPLES, PALI, DISTRICT PALI.—Shri R. Pathak of the Western Circle of the Survey, discovered temples of Brahmanical and Jaina pantheons assignable to *circa* seventeenth-eighteenth century A.D.

60. MEMORIAL STONES, PALI, DISTRICT PALI.—Shri K. Raghavachary, assisted by Shri R. Pathak of the Western Circle of the Survey, discovered three inscribed memorial stones of *circa* twelfth century A.D.

TAMIL NADU

61. CHOLA TEMPLE, ANGAMBAKKUR, DISTRICT CHINGLEPUT.—Shri Shivananda Venkatrao of the Southern Circle of the Survey, noticed a temple of the Chola period.

62. SCULPTURE, KAMUGAMPALLAM, DISTRICT CHINGLEPUT.—Shri Shivananda Venkatrao of the Southern Circle of the Survey, discovered a sculpture of Siva assignable to the Pallava period.

63. CHOLA TEMPLE, KILAMBI, DISTRICT CHINGLEPUT.—Shri Shivananda Venkatrao of the Southern Circle of the Survey, noticed an Isvara temple of the Chola period.

64. SCULPTURES, KILKADIRPUR, DISTRICT CHINGLEPUT.—-A sculpture of Siva-Parvati and a sixteen-faceted *linga* assignable to the late Pallava period and a *sapta-matrika* panel ascribable to the Chola period were discovered by Shri Shivananda Venkatrao of the Southern Circle of the Survey.

65. SCULPTURES, MELOTHIVAKKAM, DISTRICT CHINGLEPUT.—Shri Shivananda Venkatrao of the Southern Circle of the Survey, noticed a Jaina image of *tirthankara* datable to *circa* fourteenth-fifteenth century A.D. and sculptures of Ganapati and Subrahmanya with consorts, assignable to the Vijayanagara period.

66. SCULPTURE, PERUMBAKKAM, DISTRICT CHINGLEPUT.—Shri Shivanand Venkatrao of the Southern Circle of the Survey, brought to light a sculpture of Vishnu with consorts datable to the late Chola period.

67. SCULPTURE PUDUPAKKAM, DISTRICT CHINGLEPUT.—Shri Shivanand Venkatrao of the Southern Circle of the Survey, noticed an image of Lajja-Gauri assignable to the Chola period.

68. SCULPTURE, NARAPAKKAM, DISTRICT CHINGLEPUT.—Shri Shivananda Venkatrao of the Southern Circle of the Survey, noticed a sculpture of Vishnu with consorts assignable to the Vijayanagara period.

69. SCULPTURE, VIPPEDU, DISTRICT CHINGLEPUT.—Shri Shivananda Venkatrao of the Southern Circle of the Survey, discovered a sculpture of Vishnu datable to *circa* fourteenth-fifteenth century A.D.

70. CHOLA TEMPLE AND SCULPTURES, VISHAR, DISTRICT CHINGLEPUT.—Shri Shivananda Venkatrao of the Southern Circle of the Survey, noticed a late Chola temple, locally called Bhimesvara, and sculptures of Vishnu and Subrahmanya with his consorts.

71. JAINA SCULPTURES, ARUMANA, DISTRICT KANYAKUMARI.—Shri Raman Namboodiri of the Southern Circle of the Survey, noticed stone sculptures of Jaina *tirthankaras* in Chitral cave temple.

72. WOODEN SCULPTURES, ERNIEL, DISTRICT KANYAKUMARI.—Shri Raman Namboodiri of the Southern Circle of the Survey, noticed wooden sculptures in Erniel palace,

73. MURAL PAINTING, NATTALAM, DISTRICT KANYAKUMARI.—Shri Raman Namboodiri of the Southern Circle of the Survey, noticed a mural painting of Vishnu accompanied by his consorts Sri-Devi and Bhu-Devi, datable to *circa* eighteenth century A.D. in the Nelluveli Mahadeva temple.

74. PORTRAIT SCULPTURES AND WOOD CARVINGS, THACKALAY, DISTRICT KANYAKUMARI.—Shri Raman Namboodiri of the Southern Circle of the Survey, noticed beautiful portrait sculptures of Cheraman Peruman and Udaya Kerala Varma in the *namaskara-mandapa* of the Keralesvaran temple and wood carvings of Brahma, Siva, Indra and Vishnu in the Ramasvamikoil.

75. WOOD CARVINGS, TIRUPARAPPU, DISTRICT KANYAKUMARI.—Shri Raman Namboodiri of the Southern Circle of the Survey, noticed wooden carvings and bracket figures in the *namaskara-mandapa* of the Mahadevar temple.

76. MURAL PAINTINGS AND WOOD CARVINGS, THIRUVATTAR, DISTRICT KANYAKUMARI,—Shri Raman Namboodiri of the Southern Circle of the Survey, discovered paintings of Gaja-Lakshmi, Bhadrakali, Kiratamurti, Arjuna, and *utsava* procession of *Sri-Chakra* with Vishnu in the centre on the walls of the *Srikoil* in the temple of Adikesavaperumal and wood carvings in the ceiling of the *mandapa* and wooden bracket-figures of Uma-Mahesvara, Sarasvati, Gopala-krishna, Parvati, Mohini, Rama, Lakshmana and Annapurna in. the same temple,

77. TEMPLE AND SCULPTURES, KOVILUR, DISTRICT NORTH ARGOT.—Shri Hanumanthappa Gengappa Telagu of the Southern Circle of the Survey, noticed a Siva temple and sculptures of Siva, Parvati, Vinayaka, Dakshinamurti and Amman, all datable to the Vijayanagara period.

78. SCULPTURE, MAHENDRAVADI, DISTRICT NORTH ARGOT.—Shri Hanumanthappa Gengappa Telagu of the Southern Circle of the Survey, recorded a broken sculpture of Lakshmi-narasimha, discovered in the course of earth-work excavation in front of the monolithic rock-cut temple.

79. FORT, MANSURABAD, DISTRICT NORTH ARGOT.—A hill-fort built of massive dressed granite stones was noticed by Shri Hanumanthappa Gengappa Telagu of the Southern Circle of the Survey. The structure, belonging to the Muslim period, is provided with lofty bastions at the four corners and contains a granary and two tanks inside.

80. TEMPLES, PERIYAPETTAI, DISTRICT NORTH ARCOT.—Shri Hanumanthappa Gengappa Telagu of the Southern Circle of the Survey, discovered three temples of the Vijayanagara period, dedicated to Siva (called Athesvara), Vishnu (called Alagaperumal) and a seated deity over a seven-hooded serpent-*pitha.* The *kalyana-mandapas* of these temples have ornate carvings and the *prakara* walls are inscribed with inscriptions in *Grantha* and Tamil characters.

81. CHOLA TEMPLE, SADUPPERI, DISTRICT NORTH ARCOT.—Shri Hanumanthappa Gengappa Telagu of the Southern Circle of the Survey, discovered a Chola temple, dedicated to Siva, in dilapidated condition.

82. TERRACOTTA FIGURINES, SIVAMANGALAM, DISTRICT NORTH ARCOT.-—The Southern Circle of the Survey, discovered about a dozen terracotta human-faced animal figurines and a few heads of human figures while digging a pit for fencing purposes near the monument.

83. MEGALITHIC SITE, TERKUMEDI, DISTRICT NORTH ARCOT.—The Southern Circle of the Survey, noticed megaliths.

84. HERO-STONE, VADAKAPATTU, DISTRICT NORTH ARCOT.—Shri Hanumanthappa Gengappa Telagu of the Southern Circle of the. Survey, noticed a hero-stone datable to the Chola period.

85. TEMPLES, DISTRICT NORTH ARCOT.—Shri Hanumanthappa Gengappa Telagu of the Southern Circle of the Survey, discovered temples of the Vijayanagara period at the following palaces: Amman temple at Devikapuram, Siva temples at Kalasapakkaru, Palankovil and Pallipattu and Vellatangisvara temple at Senandal. Most of these temples have pillared *mandapas*

which are provided with beautiful sculptural decorations and themes largely derived from the *Ramayana* and the *Mahabharata,* as also some erotic scenes.

86. SCULPTURES, DISTRICT NORTH ARGOT.—Shri Hanumanthappa Gengappa Telagu of the Southern Circle of the. Survey, discovered sculptures of Vishnu with consorts at Alliyalamana-galam, of Devi at Ambalur, of Vinayaka, Surya, Chandra, Vishnu with his consort and Subrahmanya at Kappalur, of Mahishamardini at Pundi, of_ Siva and Parvati at Puduppalaiyam, of Devi at Sevaraipundi, all ascribable to the Vijayanagara period. He further noticed images of *matrikas* (either separately or in a panel) in the temples at Indravanam, Mattaparaiyur and Veerasambannur.

UTTAR PRADESH

87. URBAN ARCHAEOLOGY, AGRA, DISTRICT AGRA.—The M. S. University of Baroda and the Northern Circle of the Survey, jointly carried out the survey of urban archaeology of Agra with a view to examining the theory of Carlleyle about the wall around Agra. The survey disclosed the invalidity of Carlleyle's theory, brought to light some sculptures of Hindu deities and revealed an interesting growth pattern of the city.

88. AMALAKA, FATEHPUR SIKRI, DISTRICT AGRA.—Dr Arun Kumar and Shri S. K. Jain of the Northern Circle of the Survey, noticed, to the left of the road leading to the bus-stand, a 1.5 m-high square mound at the base of which was lying a fragmentary *amalaka,* originally about 1 m in diameter, suggesting the existence of the ruins of a temple within the mound.

89. EARLY HISTORICAL SITE, MOTIYARI, DISTRICT BANDA.—Dr Chhotey Lal Tripathi, a student of the Sampurnanand Sanskrit University, Varanasi, discovered black-slipped Ware, and microliths made of chert and quartz assignable to early historical period. Microliths of non-geometric shapes were also discovered in the bed of the river Bagai near this place.

90. MICROLITHIC SITES, DISTRICT JAUNPUR.—The Northern Circle of the Survey, noticed microliths at Dayalpur, Pusagangamani, Shahganj and Sujanganj. In addition to microliths, black-and-red ware and black-slipped ware were found at Kadhwan and Sarai Pandri.

91. MICROLITHIC SITE, BARWASAGAR, DISTRICT JHANSI.—Sarvashri K. P. Poonacha and G. B. Misra of the Northern Circle of the Survey, discovered a microlithic site at the embankment of Barwasagar, adjoining Jharna Ashram, which yielded non-geometrical micro lithic implements comprising blades, awls and fluted cores of chert.

92. RED WARE SITES, DISTRICT SULTANPUR.—Material remains of culture consisting of red ware were noticed by the Northern Circle of the Survey, at more than fifty sites at places like Amermau, Arju, Bangarkhurd, Budhapuri, Chanda, Dabarpur, Dandri, Dewarsah, Dhaunpur, Shahgarh and Shankarpur.

WEST BENGAL

93. MEDIEVAL TEMPLE, JIBTA, DISTRICT BANKURA.—Shri B. Bandyopadhyaya of the Eastern Circle of the Survey, noticed a *pancharatna* temple known as Damodar temple.

94. SCULPTURES, DHARAPAT, DISTRICT BANKURA.—Shri B. Bandyopadhyaya of the Eastern Circle of the Survey, found images of Vishnu and Jaina *tirthankaras* datable to *circa* eleventh-twelfth century A.D.

95. TEMPLE, DEULBHIRA, DISTRICT BANKURA.-—Shri B, Bandyopadhyaya of the Eastern Circle of the Survey, noticed a stone temple of the Orissan type.

96. BRICK TEMPLE, METALYA, DISTRICT BANKURA.-—Shri B. Bandyopadhyaya of the Eastern Circle of the Survey, discovered a brick temple of the *ratna* type.

97. TEMPLE, VIKRAMPUR, DISTRICT BANKURA.—Shri B. Bandyopadhyaya of the Eastern Circle of the Survey, noticed a laterite temple built in the Orissan style and datable to *circa* seventeenth century A,D.

98. SCULPTURES, BEGUNIA, DISTRICT BURDWAN.—Shri L. M. Wahal of the Eastern Circle of the Survey, discovered a number of stone sculptures representing Ganesa, Nataraja, Surya, Vishnu, Uma-Mahesvara, *ashta-dikpalas.*

99. SCULPTURES AND TEMPLES, PARIHATI, DISTRICT MIDNAPURA.—Kumari S, Bose of the Eastern Circle of the Survey, noticed a colossal Jina-head, an eight-armed female deity, locally called Runkini-devi, standing on a prostrate corpse and holding an elephant above the head, apart from minor Jaina sculptures and a stone temple of *chala* type which bears stucco-work ascribable to late medieval period.

V. RADIOCARBON DATES[1]

Radiocarbon dates presented in the following pages were determined at the Physical Research Laboratory, Ahmadabad. The dates are in B.P, and are based on half-life value of 5730±40 years; and for their conversion into B.C./A.D. scale, the year 1950 is to be taken as the base. The sites are arranged Statewise and alphabetically. The dates are not corrected for any "C/"C variations.

JAMMU AND KASHMIR

1. SEKI PAPARIAN, DISTRICT ANANTNAG

PRL-595. Loess Palaeosol Carbonate fraction of the soil. Sample no. SKP/78/1.	34200+2570 (32250 B.C.) —1960
PRL-596. Loess Palaeosol Fr. A. organic and Fr, B. Carbonate fractions of the soil. Sample no. SKP/78/4.	Fr. A, > 31,000 Fr. B.> 31,000

2. BURZAHOM, DISTRICT SRINAGAR

PRL-585, Loess Palaeosol-l Organic fraction of the palaeosol. Sample no. BRZ/78/6	> 31,000
PRL-586. Loess Palaeosol Organic fraction of the palaeosol. Sample no. BRZ/78/7	>31,000
PRL-588. Kankar layer Carbonate fraction of the soil. Sample no. BRZ/78/9	14400+300 (12450 B.C.) —290
PRL-590. Loess Palaeosol Fr. A. represents date on carbonate fraction and Fr. B. on the organic fraction of the soil. Sample no. BRZ/78/4.	Fr. A. 17560+360 (15610 B.C.) 350 Fr. B. 19000+840 (17050 B.C.) —760
PRL-591. Loess Palaeosol Carbonate fraction of the soil. Sample no. BRZ/78/3	20940+1360 (18990 B.C.) —1170

1Contributed by D. P. Agrawal, Shri R. V. Krishnamurthy, Kumari Sheela Kusumgar and Dr R. K. Pant.

2Samples submitted by : 1-4, the Physical Research Laboratory, Ahmadabad; and 5, the Allahabad University, Allahabad.

PRL-592. Loess Palaeosol Organic fraction from Garhi Burzahom, Sample no. GRH/78/1	27110+2070 (25160 B.C.) •—1660
PRL-593.Loess Palaeosol Fr. A. Loess Palaeosol and Fr. B. represent dates on carbonate and organic fractions of the soil. Sample no. BRZ/78/1	Fr. A. 16150+380 (14200 B.C.) —370 Fr. B. 19440+860 (17490 B.C.) —780
PRL-594. Loess Palaeosol Carbonate fraction of the soil. Sample no. BRZ/78/5.	21030+940 (19080 B.C.) —850
PRL-611. Loess Palaeosol Carbonate fraction of the soil. Sample no. BRZ/78/2.	20780 + 590 (18830 B.C.) —550
PRL-643. Loess Carbonate fraction; depth 5 m. Sample no. BRZ/79/3.	31410+1850 (29460 B.C.) — 1510

3. OLGHIBAGH, DISTRICT SRINAGAR

PRL-597. Loess Palaeosol Carbonate fraction of the soil Sample no. OLB/78/1	25680+1840 (23730 B.C.) —1500
PRL-598. Loess Palaeosol-2 Fr. A. carbonate and Fr. B. organic fractions of the soil. Sample no. OLB/78/3	Fr. A. 21810+650 (19860 B.C.) —600 Fr.B. 12930+470 (10980 B.C.) —440

RAJASTHAN

4. BUDHA PUSHKAR, DISTRICT AJMER

PRL-562. Caliche Kankar nodules from surface. Sample no. C-32a	5O30±170 (3080 B.C.)
PRL-563. Caliche, Caliche, 20 cm. Sample no. C-32.	6490± 140 (4540 B.C.)
PRL-564. Caliche Caliche, depth 1 m. Sample no. C-33.	6200±170 (4250 B.C.)

PRL-565, Caliche
Caliche, depth 1 to 1 .5 m. Sample no.
C-34. 3520+_230 (1570 B.C.)

PRL-566. Caliche
Caliche, depth 1.5 to 1.75 m.
Sample no. C-35. 371O±16O (1760 B.C.)

PRL-567. Caliche.

Caliche, depth 1-75 to 2 m. 2980+JOO (1030 B.C.)

Sample no. C-36.

PRL-568. Caliche
Caliche, depth 2.25 to 2.75 m. 4550±150 (2600 B.C.)
Sample no. C-37.

PRL-569. Caliche
Caliche, depth 1.5 to 2.5 m. 3890±150 (1940 B.C.)
Sample no. C-38.

PRL-570. Caliche

4280+110(2330 B.C.)

Caliche, depth 1.5 m.

Sample no. C-39.

UTTAR PRADESH

. MAHAGARA, DISTRICT ALLAHABAD

PRL-602. Upper Palaeolithic 11300+190(9350 B.C.)

Shells from Trench L/6;
Layer : upper level of the
cemented Gravel III; depth 017 to 0-33 m.
Sample no. AU/ALLD/MGR-78/5.

PRL-603. Upper Palaeolithic
Shells from Trench L/6;
layer : lowest level of the
cemented Gravel III;
depth 073 to 1-13 m. 14140+410(12190 B.C.)
Sample no. AU/ALLD/MGR-78/6

VI. PALAEOBOTANICAL AND POLLEN ANALYTICAL INVESTIGATIONS[1]

The present report incorporates the work done on the subject both at the Birbal Sahni Institute of Palaeobotany, Lucknow (below : 1-2 and 5-7), and the Deccan College Post-graduate and Research Institute, Pune (below : 3-4).

JAMMU AND KASHMIR

1. KASHMIR VALLEY, JAMMU AND KASHMIR.—Pollen diagrams constructed from several type-sites belonging to the diverse lithounits, all belonging to the Lower Karewas, have indicated temperate and cool stages. No physical evidence of a glaciation has, however, been found "within the Lower Karewa deposits; the overlying physical evidence of glaciation is hitherto believed to be of II Gl. In fact, it should be referred to as the I Gl. The data are being tied up with reference to schemes of Lithostratigraphy of the Lower Karewas.

MAHARASHTRA

2. DIAMABAD, DISTRICT AHMEDNAGAR.—Fourteen samples of plant remains (charcoals and carbonized grains etc.) belonging to Savalda, Malwa and Jorwe cultures and ranging from about 3600-3000 radiocarbon years from this site were examined.

The sample from Savalda, Phase I, has leaf impression bearing clay lumps. The leaf impressions are fragmentary and their examination for identification is in progress.

Seven samples from Malwa, Phase IV, and six from. Jorwe, Phase II, have several kinds of food grains, and of wild plants. Comparatively the Jorwe samples are richer in kind and number of grains than those the Malwa samples. Food economy in both seems to be largely-alike but for some differences. Wheat, barley, *Eleusine,* peas, pulses, *Zizyphus,* etc., are the common ones. Their investigation is in progress.

3. NAIKUND, DISTRICT NAGPUR.—Six species of ancient food grains of cultivated and wild plants were recovered loose from the habitational deposits as well as through Floatation Technique from the megalithic site of Naikund. The grain assemblage includes the following plants: rice *(Oryza sativa* Linn), kodo millet *(Pasplum scrbiculatum* Linn.), field pea *(Pisum. arvense* Linn.), lentil *(Lens esculenta* Moench.), blackgram? *(Phaseolus mungo* Linn.) and Indian jujube *(Zizyphus jujuba* Lamk.).

4. INAMGAON, DISTRICT PUNE.—Ancient food grains of fourteen species of cultivated and wild plants were recovered from the chalcolithic site of Inamgaon. The period has been tentatively assigned to *circa* 1600-700 B.C. The grain assemblage represents the following plants: barley *(Hordeum vulgare* Linn.), black gram *(Phaseolus mungo* Linn.), beleric myrabolan *(Terminalia* sp.), field pea *(Pisum arvense* Linn.), green gram *(Phaseolus aureus* Roxb.), grass pea *(Lathyrus sativus* Linn.), horse gram *(Dolichos Lablab* Linn.), hyacinth bean *(Dolichos Lablab* Linn.), Indian cherry *(Cordia myxa* Linn.), Indian jambos *(Eugenia jambolana* Linn. Syn. *Syzigium cumini* Lam.), lentil *(Lens esculenta* Moench.), wheat *(Triticum* sp.), wild date *(Phoenix sylvestris* Roxb.) and Pongamia sp.

1Contributed by Dr Vishnu Mittre and Kumari Aruna Sharma of the Biral Sahni Institute of Palaeobotany, Lucknow and Dr M. D. Kajale of the Deccan College Post-graduate and Research Institute, Pune.

UTTAR PRADESH

5. HULAS, DISTRICT SAHARANPUR.—Of the five samples, all referred to the Late Harappan, two samples of potsherds, one from Hulas and the other from Un, were examined. These were found bearing imprints of rice and stem fragments. The potsherds from Hulas (HLS-XH-6/Qd-3) were discovered at a depth of 2.55 m. The potsherds which were broken along their thickness, exposed several husk impressions. The impression of the lice measured about 7 x 3 mm in both the samples, but impression of awns could only be observed in husk impressions on the potsherds from Un. The ornamentation pattern of husk impressions shows characters common between the cultivated rice *0. sativa,* and the wild perennial *Q. rufipogon.* . . . '

Attempts to separate the stem fragments, which were 2-3 mm in diameter, for the anatomical studies prove unsuccessful as they came off in extremely small bits.

Three samples of mud plaster, two from XJ-6, Qd. 4, layer 6, at a depth of 1.30 mm and from the late Harappan phase, and one from AZ/Qd. 3, layer 11, depth 4.32 m from Painted Grey Ware levels remain to be examined.

6. POLLEN OF WILD GRASSES OF INDIAN SUBCONTINENT.—To solve the problem of cereal vs. non-cereals (wild grass) pollen which is of considerable importance in tracing the history of origin and progressive development of agriculture through pollen analysis, pollen studies of sixty-seven species of wild grasses belonging to genera *Coix, Themeda Vetiyeria, Boisseria, Sorghum, Digitaria, Saccharum, Chrvsopogon, Solerostachya, Ischaemum, Pasplum, Cenchrus* and *Polypogon* were carried out. The study has revealed large-sized pollen grains found in three species of *Coix,* one of which is cultivated even today by the tribals. The size of their pollen compares with that of the maize *(Zea mays),* a crop introduced in the late historical period from the New World.

Besides, pollen grains in some species of *Themeda, Chrysopogon, Ischaemum and Sorghum* are larger than the pollen of cultivated grasses.

This study shows that the so-called cereal-type pollen in pollen daigrams may equally belong to wild grasses.

7. WORLD COLLECTION OF HUSKED GRAINS OF MODERN RICE.—For detailed study of the differentiating characters of the husk between the wild and the cultivated species of *Oryza,* materials collected from Kew Herbarium, London, were examined. The materials include sixteen samples of cultivated rice *(0. sativa),* of which five are from the Indian plants and one of *0. glaberrima* cultivated in Africa. The specimens of the wild rices comprise seven Indian and fourteen extra-Indian wild rices, the total number of species of *Oryza* including the Indian specimens examined being twenty-one species. ,

The study indicates that in general the husks of wild and cultivated rices can be distinguished from one another except in the case of *0. rufipogon* which has indistinguishable husk characters from the cultivated *0. sativa* and *0. glaberrima.* The work is in progress. It is hoped that when the study is completed it would help a great deal in referring the rice remains from archaeological sites to wild or cultivated strains. The distinguished criteria discovered would also be supported by Scan Electron Microscopy of these husks.

VII. MUSEUMS

1. GOVERNMENT MUSEUM, ALMORA.—The Museum was set up in November 1979 with a view to salvaging the antiquarian wealth and folk art of the hill areas of Uttar Pradesh and to develop visual programmes and research through their display. Important collections include: a stele of blue schist (45 x 30 cm), representing three seated *matrikas* viz. Brahmani, Mahesvari and Kaumari from Ranihat (pl. XXVIII A); a three-headed bust of Brahma (32 x 24 cm) (?) of about the tenth century; a metallic copy of the copper-plate (50 x 33 cm) of Dyutivarman, dated in the fifth year of the king, from Talesvara; and four brass dice of Chand Icings of Almora. Besides, sixteen Katyuri sculptures, two copper-plates and a few beads of agate and carnelian, all belonging to the hill areas, were received as a loan from State Museum, Lucknow.

A personnalia wing in the name of the eminent Hindi poet Sumitranandan Pant was organized. It includes his photographs, manuscripts, objects used by him, Sahitya Academy's Trophy awarded to him, etc.

2. GOVERNMENT MUSEUM, ALWAR.—During the year under review, the Museum displayed miniature paintings and manuscripts from reserve collections, besides cleaning about one hundred guns.

3. STATE MUSEUM, BHARATPUR.—The Museum acquired two three-faced heads having locks in red sandstone from District Sawai Madhopur. The earliest of the two belongs to the Kushana period.

4. ARCHAEOLOGICAL MUSEUM, BIJAPUR.—The galleries of the first floor were reorganized. Moreover, concealed lighting arrangements were also completed.

5. PRINCE OF WALES MUSEUM, BOMBAY.—During, the year under review, the Museum received ninety-two objects and nine hundred sixteen copper coins, confiscated by the Collector of Customs, Bombay, on long term loan from the Archaeological Survey of India. These anti quities include fifty-six wood works, and five miscellaneous objects.

Besides, one each of Kashmiri shawl and Baluchar *sari,* belonging to the early twentieth century, two *pata* paintings on cloth, assignable to nineteenth century, two book covers datable to A.D. 1875 and one glass painting depicting Dandia Ras assignable to A.D. 1900 were added to the Museum collections. Two stone sculptures and eight miniature paintings, loaned for the Paris Exhibition, were brought back from the National Museum, New Delhi.

Coinciding with the birth anniversary of Dr Coomaraswamy a repeat show of multi-media presentation 'Indian Art Through the Eyes of Coomaraswamy' was arranged in August 1979 for the public.

As a part of the fund raising programme for the Coomaraswamy Memorial Fund, the Museum arranged *sitar* recital by Pandit Ravi Shankar on 5.4.79.

The Museum put up an Archaeological Exhibition entitled 'A Decade of Archaeology' sponsored by the Directorates of Archaeology of Andhra Pradesh, Karnataka, Maharashtra and Tamil Nadu from 12 to 20 December, 1979. The exhibits included the important excavated materials of the last ten years from these states.

6. INDIAN MUSEUM, CALCUTTA.—During the year under review, the Museum purchased a hoard of sixty-one silver coins belonging to the Sultans of Bengal, namely, Ilyas Shah,

Hussain Shah, Sikandar Shah and others, found in an earthen! pot during the construction of roads at Ramchandrapur, District 24 Parganas; one each of gold and silver coins of Sasanka and the East India Company; an illustrated manuscript depicting the scene from Bhagavata Gita of the Jaipur school; two illustrated leaves depicting *Ras-lila* and Devi; one Nepalese gilt bronze image on a swan, of the nineteenth-twentieth century; and one copper image of Buddha, also of nineteenth-twentieth century.

The Archaeological Section organized an exhibition from May to June 1979 in which the hand of a mummy, Bodhisattva Padmapani, ground plan of the Asoka Gallery and a few terracottas were displayed. The Museum also put up temporary exhibitions: 'Cultural Haritage of India in Postal Stamps' to mark the 125th anniversary of the release of postal stamps and displayed sixty stamps of different denominations on temples, monuments, sculptures, coins, paintings, and the like. Further, an exhibition entitled 'Museum and the Child[5] sponsored by the All India Museums Association were displayed: exhibits included a child head from the Gandhara school, mother and child of the Pala school, and Maya's dream on the Bharhut, railings. Three more exhibitions on themes such as 'Aspects of child life in paintings', 'Kalighat paintings', and 'Omar Khayyam and some glimpses of Indo-Persian art' were organized.

Setting up a new gallery on 'Coins and other Glyptic Records' has been taken up.

7. LOCAL ANTIQUITIES MUSEUM, CHITRADURGA.-The Museum collected one cannon ball and a dagger.

8. GOVERNMENT MUSEUM, CHITTAURGARH.—The Museum set up a new gallery for paintings. The exhibits include thirty miniatures, portraits of Mira Bai, the great devotee, and Maharana Sanga. Lighting arrangements were also improved.

9. CENTRAL MUSEUM, GWALIOR.—The Museum, during the year under review, set up two new galleries and displayed the terracottas and mural paintings collected from Pawaya.

10. ARCHAEOLOGICAL MUSEUM, HALEBID.—The Museum is enriched by the addition of fifty-seven sculptures collected from the Nagesvara temple-complex, of which twenty-eight were displayed in the open-air gallery. One bronze idol (size: 43 *x* 11 cm) of Bhu-Devi from the Customs, a genealogical chart of the Hoyasla rulers and a map showing the location of the Hoyasala monuments were also on show.

11. ARCHAEOLOGICAL MUSEUM, HAMPI.—The Museum, during the year under review, set up a new gallery for the exhibitions of coins, copper-plates and palm-leaf manuscripts. A cloth painting belonging to the late Vijayanagara times and a chart showing the evolution of the Kannada-Telugu script, are the new additions.

_ 12. GOVERNMENT MUSEUM, HASSAN.—The museum, during the year under review, acquired one metal and one hundred twenty-seven stone sculptures, out of which sixty-nine are of Jaina *tirhankaras.*

13. CENTRAL MUSEUM, INDORE.—The Museum is enriched by the addition of stone sculptures representing Ambika, Bhairava, Chamunda, Gaja-Lakshmi, Gajasura-Sambar, Kubera, Lakulisa, Mahishasuramardini, Nataraja and *yakshi,* belonging to the Pratihara and Paramara periods from Hingaljgarh, Chaurasigarh and Indragarh. A new gallery for the selected sculptures from Hinglajgarh was also set up.

14. KITTUR RANI CHANNAMMA MEMORIAL GOVERNMENT MUSEUM, KITTUR.—The museum collected seven terracotta figurines from the Kittur Fort.

15. GOVERNMENT MUSEUM, KOTA.—The Museum received six silver coins, of British India from the Head Master, G.H. School, Kota.

16. STATE MUSEUM, LUCKNOW.—During the year under review the Museum purchased twenty-eight objects including terracottas, clay moulds and sealings. Important among them are: two terracotta plaques depicting Lajjagauri, of the Gupta period, a figure of a lady, of the Sunga period, both from Kasuambi; a human head belonging to the Gupta period and a terra cotta plaque showing a lady (pl. XXIX A), from Basti.

The Museum put up an Mobile Exhibition from 30.11.79 to 2.12.79 at Kushinagara and from December 1979 at Gorakhpur.

17. GOVERNMENT MUSEUM, EGMORE, MADRAS.—The Museum, during the year under review, purchased three portraits in oil of Ariyakudi Ramanuja Iyengar, Maharajapuram Visvanatha Iyar and Mysore Vasudevacharya and one water colour painting of a torso, all by late H. V. Ramagopal, an artist, from Shrimati H. Santha; one tapestry work from Shrimati H. Santha; one tapestry work from Shri V. Saranathan, Madras; two Thanjavur paintings and Tiruvilaiyadalpuram illustrations, one set of ivory chess-board with stand, two paintings on ivory, four Japanese paintings on silk, two mirrors in metal, one porcelain easket with lid and a textile specimen, all from Shrimati Rajalakshmi Venkatakrishna, Madras; an image of Gaja-Lakshmi and panel representing figures of Brahma, Ganesa, Narasimha, Gaja-Lakshmi, etc, from Shri K, S. Ramanujachari, Kaveripakam, District North Arcot.

Besides, obtaining confiscated image of Kali in metal from Tehsildar, Fort, Tondiarpet, the Museum acquired a good number of antiquities under the treasure-trove Ends. Noteworthy among them are: one inscribed image of Buddha, from Prataparamapuram, District Thanjavur; one image of Ganesa in metal, from Tantoni, District Tiruchchirappalli; and one badly damaged image of Skanda, from Rayarpalayam, District South Arcot. The Bronze Gallery was enriched by four more images.

A special exhibition of the latest additions to the Archaeological Section was arranged from 1.8.79 to 31.8.79 in which one image of Buddha in metal from Nagapatinam, metal ware drum with legend in Tamil character of thirteenth century and an image of Kali in metal from Chettipulam worth special mention.

18. ARCHAEOLOGICAL MUSEUM, FORT ST. GEORGE, MADRAS,—-The Museum, during the year under review, accessioned a set of seventeen porcelain vases collected from the Collector of Customs, Bombay and copper coins, belonging to the East India Company and two miniature paintings of the Mysore school.

19. GOVERNMENT MUSEUM, MATHURA.—During the year under review the Museum accessioned ninety-eight sculptures (pl. XXVIII B), twenty-one coins, twenty terracottas and five miscellaneous objects. Noteworthy among them are: a stone inscription measuring 96 x 44 cm, belonging to the reign of Sodash, from Mirzapur; ornamental door-jamb in red sandstone, measuring 160.5 x 35 x 21 cm, showing several mouldings and motifs and a figure of Ganga on *makara,* from Shri Krishana Janamasthan Trust; headless image of Buddha (size: 106 x 53 cm) in red sandstone (pl. XXIX B), from Dhauli Pyaoo; stele carved with the figure of Lakshmi in red sandstone (measuring 24 x 5.5 cm), also from Shri Krishna Janamsthan Trust; *Siva,-linga* (height 109 cm) in red sandstone, belonging to the Kushana period, from Chaubara mound; and stone bowl with few Brahmi letters, belonging to Kushana period, from Dhauli Pyaoo.

A new gallery for the objects collected from Govindgarh is being thrown open to the public. The Archaeological Section of the Museum organized a seminar on 'Cultural History of the Ancient Mathura' on 11 and 12 January 1980,

An exhibition of antiquities from Sonkh was organized in the D.S. College, Aligarh.

20. CENTRAL MUSEUM, NAGPUR.—During the year under review the Museum received twenty-one sculptures belonging to the medieval times from Archaeological Survey of India. The Archaeological Section of the Museum was reorganized by introducing wooden pedestals for some of the sculptures. A diorama depicting the life of the prehistoric man has been completed in the Prehistoric Section.

21. ARCHAEOLOGICAL MUSEUM, NALANDA.—In connection with the Second International Conference of the Buddhist Studies held at Nalanda from 17.1.80 to 19.1.80 a Special Exhibition was organized displaying important antiquities of the Museum, photographic enlargements and charts of various Buddhist sites.

22. STATE MUSEUM, PANAJI.—The Museum, during the year under review, acquired and exhibited the sculptures of Vishnu from Parse and Kunkali, and Jaina Tirthankara from Dabolin.

Two new sections, one on Geology and the other on war weapons, have been set up. The Archaeological Unit of the Directorate undertook photo-documentation of the forts of Cabo de Rama of Canacona, Tivim, Chapora, Reis Magos, Aguda, Kolval in Bardez Taluk, Alorna, Terekhol in Pernam Taluk and Mormugao in Marmagao Taluk.

23. STATE MUSEUM, PATNA.—The Museum collection is further enriched by the acquisition of a double-figured image of *sala-bhanjika,* belonging to the second century, from Rajendra Park, Patna; four fragmentry sculptured pieces, datable to the late Gupta and the Pala periods; and a seated male figure in bronze of the nineteenth century.

24. ARCHAEOLOGICAL MUSEUM, SARNATH.—The Medieval Gallery of the Museum was reorganized providing five large-sized and one T-shaped showcases for the display of small exhibits. Concealed lighting arrangements were also introduced in the museum.

25. GOVERNMENT MUSEUM, SHIMOGA.—The Museum acquired one palm-leaf manuscript, three *sati* stones, three hero-stones and one stone inscription.

26. GOVERNMENT MUSEUM, UDAIPUR.—The Museum collection is enriched by the purchase of four thousand seven hundred coins in gold, copper and silver, belonging to early historial times to the British period, from Shri Roshan Lal Samar, Advocate, Udaipur.

27. ARCHAEOLOGICAL MUSEUM, VAISHALI.—During the Vaishali Mahotasava, held in April, 1979, a facelift was given to the Museum, apart from the display of photo-enlargements of the excavated finds.

28. BHARAT KALA BHAVAN, VARANASI.—During the year under review, the Museum acquired ten sculptures, twenty-eight coins, one thousand one hundred eighty paintings of different school, one hundred pieces of textiles, nineteen manuscripts and letters and seventy-eight stamps and covers.

29. ARCHAEOLOGICAL MUSEUM, VELHA GOA.—The Museum, during the year under review, re-exhibited the portrait paintings after chemical treatment, besides a model ship after its proper mending. The work of scientific storing of the paintings in the Reserve collection was also initiated.

30. DISTRICT MUSEUM, VIDISHA.-The Museum displayed the stone image of Trimurti discovered from Gyaraspur.

VIII. ARCHITECTURAL SURVEY OF TEMPLES

NORTHERN REGiON.—The Temple Survey Project, Northern Region, under Shri R. D. Trivedi took up the study of the Pratihara temples of early medieval period in the Districts of Jhansi and Lalitpur in Uttar Pradesh, Raipur, Gwalior and Shivpuri in Madhya Pradesh, Jhalawar, Kota, Jaipur and Chittaurgarh in Rajasthan.

The Jarai Math temple at Barwasagar, District Jhansi, with its *pancharatha* plan and elongated *garbha-griha* is datable to the late ninth century A.D, Over the *adhishthana,* relieved with mouldings, rises the *jangha* (pl.XXX A). These mouldings are embellished with pedimented niches for housing the images of divinities and damsels. The *bhadra-rathikas on jangha,* two on the back side and one each on the northern and southern sides, are without any images. The smaller niches under elongated *udgamas* ('pediments') on the *jangha* are carved with the figures of *apsaras* and the niches on the *karnas* exhibit two-handed standing *ashta-dikpalas* facing their respective direction. The temple doorway facing east is profusely' ornamented. It contains multiples of *dvara-sakhas* and group of divinities on the lintels. Besides, there also appears on the lower part of the door-jambs the two river goddesses, Ganga and Yamuna, and the *dvarapalas,* who prominently occupy the central position. The *lalata-bimba* at the door-lintel presents a multiarmed goddess, in *lalitasana,* flanked by the *navagrahas, sapta-matrikas* and several other female deities. This depiction of the goddesses might suggest the dedication of the temple to a goddess.

Two temples discovered at Amrol, in District Gwalior, situated at a distance of about 3 km from each other, are equally notable. The larger one, called Ramesvara temple (pl. XXXI A), appears to be earlier than the other known as Danebaba temple, the latter being datable to the eighth century A.D. (pl. XXXI B). Both the temples are *pancharatha* in plan, each with a *garbha-griha* ('sanctum') and a narrow *antarala* ('vestibule'). In elevation they are characterized by low *adhisthana* comprising three simple mouldings, *jangha* with *bhadra* ('central') and *karna* ('corner') niches surmounted by *udgamas* ('pediments'), *varandika* having three or four prominent mouldings and *sikhara* consisting of *madhyalata* ('central shoot') and *karnas* marked with *bhumi-amalakas.* The *bhadra* niches of these temples contain several images such as Parvati, Karttikeya and Ganesa. While the Ramesvara temple represents mostly the figures of dancing *ganas,* the Danebaba temple shows the images of *ashta-dikpalas.*

There are about half-a-dozen temples traceable around the village Awan, District Kota, Rajasthan, and of these, a triple-shrined temple, facing east, located to the south of the village, is assignable to the ninth century A.D. It is important for its architectural features, as the temple has an elongated plan with three shrines, placed side by side, all preceded by a narrow *mukha-mandapa* resting on a row of pillars, four of them being still intact in front of the central shrine (pl. XXX B). It appears that the central shrine was dedicated to Vishnu, and the southern one to Surya and northern shrine to Siva. The *adhishthana* mouldings, having a flat *pattika* on top, are carved with foliage pattern, over which rests a simple *jangha,* relieved by pedimented niches containing various incarnation of Vishnu. The upper part of *jangha* is decorated with *ghanta-mala* ('chain and bell') design running around the temple over which *varandika* portion has a broad recess *{kantha)* engraved with *talapatra* motif. The base of the *sikhara* is further elevated by a row of plain pilastered niches.

The Nakati Mata temple at Bhavanipura, District Jaipur, is *pancharatha* in plan and elevation. It comprises a *garbha-griha* and *mukha-mandapa* resting on two front pillars, and is ascribable to the ninth century A.D. The lower part of its *adhishthana* is marked by recessed moulding decorated with *talapatra* design, which adds to its height as well to its embellishment. The *bhadra* niches on *jangha* contain the images of seated Ganesa and Brahma on the south and north respectively. Pedimented niches on the *karnas* contain two-handed *ashta-*

dikpalas in their respective directions. The *varandika* portion has a prominent recess *(antha)* carved with *talapatra* motif over which rests *saptabhauma* ('seven-storeyed') *sikhara,* surmounted by an *amalaka.* The *lalata-bimba* at the doorway exhibits a seated goddess flanked by *navagrahas* ('nine planets') indicating its dedication to a goddess.

One of the two temples at Buchkala, District Jodhpur, is also notable, as it contains an inscription of Pratihara king Nagabhata II, dated A.D. 815. The Vaishnava temple (though known as Parvati temple') is *triratha* in plan and consists of *a garbha-griha*, a multi-pillared *mandapa* and a portico. It rests on a low *adhishthana* which supports plain *jangha* relieved by a single central niche on each of the three sides having the images of Narasimha, Yogasana Vishnu and Trivikrama. The *varandika* has a broad recess *{kantha)* carved with criss-cross pattern. Its *sikhara* is damaged but the remaining lower portion shows *amalakas* at the *karnas* flanking broad central shoot *(madhya-lata).* The other contemporary temple, dedicated to Siva, consists of a *garbha-griha* and *mukha-mandapa* resting on two massive square pillars in front. Although there is resemblance of *adhisthana* and *jangha* to those of the dated Vaishnava temple referred to above, the decoration of *varandika* differs, as it bears *talapatra* decoration in the *kantha.* The *bhadra* niches represent the figures of Ganesa, Parvati and Harihara on south, west and north respectively. Its intact *sikhara,* divided into five *bhumis* by the *karna-amalakas,* contains double *amalakas, kalasa* and *vija-puraka* on its top.

Besides, the temples of early medieval period at Kansua, District Kota, Abaneri, District Jaipur, Lamba, Orian and Mandor, Districts Jodhpur and Chittaurgarh in Rajasthan were also surveyed during the period under review.

SOUTHERN REGION.—The Temple Survey Project, Southern Region, under Dr I. K. Sharma, assisted by Shri K. K. Ramamurthy, continued the survey of Western Ganga temples in Karnataka. As a result of the survey, the temple-remains and sculptures were found at the places known as Alur, Homma and Narasamagala in Chamarajanagar Taluk; Kittur in Heggadadevanakote Taluk; Kunthuru in Kollegal Taluk; Varuna in Mysore; Algodu, Hemmige, Muguru, Talakad and Vijayapuri in T. Narasipur Taluk and Ganganuru in Yelandur Taluk.

It is increasingly becoming clear that the Mysore area, under the Gangas, witnessed a dynamic adoption of architectural and sculptural patterns from the Pallavas and Cholas of the south on one hand, and the nearby Chalukyas and Rashtrakutas on the other, with whom they had political relations. This coalescence of traits can be markedly seen in their architectural remains, particularly at Alur, Narasamangala, Varuna and Talakad during the ninth-tenth century A.D. There are a few inscribed stone-slabs of the earlier period which were reused in the temples built by the successive dynasties.

Alur has two temples, Arkesvara and Desesvara, located close to each other. The ruined Desesvara temple has its nucleus dating back to the times of the Gangas. The former, on its axial layout, contains a square *garbha-griha,* a narrow vestibule, leading to a spacious *maha-mandapa,* a detached *nandi-mandapa* on four ornate pillars and an equally well-carved *bali-pitha.* The *maha-mandapa* has a central opening with *sopana* in front springing from the *pattika* with simple curved parapets, unlike the *vyala* or *makara*-heads in the Pallava caves. The *adhishthana* in both the temples is of the *tripatta-kumuda* class and above the *prati* the superstructures have not retained any original features. The pillars in Desesvara temple are simpler with massive high square base, circular shaft, clear *mala-sthanas, padma-bandha,* an elongated *kalasa* and shrunken capital elements which carried plain bevelled cross-corbels. They stand in contrast to the highly-sculptured *navaranga* and *nandi-mandapa* pillars within the Arkesvara temple, which possesses a massive square base, a circular shaft divided horizontally into panels, an elongated *kalasa,* bulbous *kumbha,* thin *pali* carrying cross-corbels and the *taranga-potikas* with median flat band. The *ashta-dikpalaka* grid over the *navaranga* ceiling with Natya-Siva in the centre, loose sculptures

of four-armed Durga in *sama-bhanga* pose, Yoga Dakshinamurti and *sapta-matrikas* (independent images originally from Desesvara), are striking specimens of Ganga-Chalukya art of *circa* eighth-ninth century A.D. Special mention may be made here of the exuberantly-carved pillars, besides the *navaranga* and the *nandi-mandapa* (pl. XXXII A). The relief figures, in framed horizontal panels, illustrate a few divinities and epic scenes, war exploits, court-scenes and royal personages. From the nature and content, it appears that these narratives portray the historic conquest of Rajendra Chola I over the Gangas (A.D. 1004). Inscriptions of the place also refer to various gifts to the god by the Chola suzerains.

The Vinitesvara temple at Homma (locally Ramesvara), now in a ruined state, is similar to Desesvara in its original layout. Its pillars are plain, massive square in section at the base and top and the middle octagonal, in section with bevelled corbels on top. They recall the rock-cut Pallava types. A stone inscription of the time of Sripurusha (A.D. 725-788) speaks of the additions made to the main temple.

The Ramesvara temple at Narasamangala has an impressive *sama-chaturasra dvitala-vimana* of an *arpita* variety. Its *talas* are raised entirely of moulded and cut-bricks above the *prati.* The *adhishthana,* a little less than two metres high was, however, of granite stone. Its evolved features, like the recessed *padma-jagati,* a semicircular *kumudavari,* a deep *kantha* with dentils and *pattika, kapota,* a *vedi,* a *vyalavari* rafters below the *prati* matched well with the fineness of the *vimana-talas* above (pl. XXXIII). The square cells and narrow *ardha-mandapa* preserved its original elevation while the *maha-mandapa* was enclosed on all sides by a modern brick wall. However, the stone pillars of *navaranga,* beams and ceiling-panels inside are in their original position. The *agra-mandapa* is a much later addition. The figure sculptures in brick and stucco and the mouldings over the *vimana* are the finest of the Ganga period and assignable to *circa* ninth century A.D. Each face of the *kati* reveals boldly-projected pilastered *koshtha.* The pilasters of the main *bhadra-sala* and *karna-kudu* start above the *valita-pattika,* whereas those of the *nasika-panjara* interestics start much lower down on *kumuda* itself. The ornamental *pranala* is cut through the *vyalavari* rafters. The *bhadra-niches* are empty and inner *nakula-pada* pilasters support the plain beam. The pilasters of the *kutas* on the main *vimana* arc square in section throughout up to the corbels; those of the *salas* and *nasika-panjaras* are uniformely tetragonal. The top of the shaft having *mala-sthana, padma-bandha, kalasa, tadi, kumbha, padma-phalaka* and *vira-kantha* at the apex, supporting cross-corbels which carry the bracket mouldings. A fine specimen of *kudya-stambha* between the *garba-griha* and *antarala* at the north-east, displays in relief the moulded brickwork with an exceptionally-fine joinery, stucco works and the general finish. There is a superstructure raised over a square *vimana* in three receding tiers. Each of the *talas* consisted of a central *sala-sikhara,* flanked by *karna-kutas,* the central *koshthas* having *vimana-devatas* and profusely-ornamented *nasika-kudus,* particularly over its *aditala.* The interspaces *(harantaras)* are also embellished with sculptures. The architrave of each *tala* carries a frieze of *hamsas* and such a decorative motif is a Ganga characteristic. The tall *griva,* as high as the overhead *sikhara,* has *padma-dala* too; its *stupi,* however, is missing. The large-sized stucco images include Kalari and Gangadhara on the south, Vishnu on Garuda and Trivikrama on the west, Chandrasekhara and Bhikshatana on the north. Similarly, in the spaces in between the *hara-sikharas* of the *tala,* images of Yoga-Dakshinamurti (south), Narasimha (west) and Brahma (north) deserve special mention. The heavy *kapota* of each *tala* is held up at the angles by grotesque human figures, stumpy *ganas,* and voluptuous *madanikas.* Inside the *maha-mandapa,* the *navaranga* pillars are like the ones at Begur, Nandi and Avani. They possess a broad square *mancha-pitha,* the shaft raising into a cubical lower *saduram,* narrow bulged circular section, plain *padma-bandha* and circular *kalasa, tadi,* recessed *kumbha,* showing suspended festoon marking its octagonal scheme, a recess and a square thin *phalaka* with *padma-bandha* underside. The prominent *taranga* cross-corbels bound by median *patta-bandha* filled with looped scrolls in dotted border recall the Pallava-Chalukya prototypes. The ceiling of the *navaranga* grid has the

ashta-dikpalakas on mounts, followed by attendant *ganas* with Tandava Siva on Apasmara in the central frame. Instead of the usual *hamsavari,* the doucene *valabhi* zone inside the *navaranga* grid displayed a variety of relief figures, *hamsas* (west), *gajas* (south), frolicking *ganas* (north) and the combination of all these (east). The corresponding external faces of the *valabhi* possessed Anantasayi, Vatapatrasayi, Rama-Lakshmana and episodes from *Panchatantra.* Further, it appears that the main temple is surrounded by smaller shrines meant for *ashta-parivara-devatas.* One of the finest Ganga specimens is perhaps the eight-handed Mahishamardini found *in situ* over a rectangular *pitha* inside a square shrine. There also occur several loose images such as the two-handed Subrahmanya, four-handed Vishnu and Surya displaying early Pallava tradition. The separate images of Chandesvara and *sapta-matrikas* are flanked by Virabhadra, Ganesa and a two-handed goat-faced Daksha which betray Chalukyan features.

The Ramesvara temple at Kittur has certain early features preserved in its simple plan and *prati-bandha* type of *adhishthana* with *tripatta-kumuda.* The full-sized two-handed *dvarapalas* at the south entrance are rare examples and recall the ones in Mahimalesvara temple at Erode The two-handed Vinayaka also belongs to this class.

The Lingamahesvara referred to in the record of Nitimarga (A.D. 853-869) is identical with the Mahalingesvara at Kunthuru. This temple has a *garbha-griha* fronted by *mandapa* on an *adhishthana* having a simple *tripatta-kumuda.* The superstructure has undergone much renovation. The two-handed Ganesa is a fine specimen belonging to the earlier period.

The Mahadevesvara (also Mahilingesvara) at Varuna housing a Sivalinga named Bhutesvara existed right from the times of the Ganga king Sripurusha (A.D. 725-788) and enjoyed patronage of some Chalukya feudatories as well during *circa* tenth century A.D. The temple has a *garbha-griha, antarala* and a *maha-mandapa.* Its *mukha-mandapa* and the squattish brick *sikhara* on the cella appear to be later additions. The basement is of the simple *prati-bandha* class. The *m,aha-mandapa* is transversely divided into three *ankanas* by the placement of pillars. The central *ankana* carries a lotus medallion on its ceiling in line with the one on the *ardha-mandapa.* The exterior wall of the cella is divided into sections by a set of six pilasters of which the outermost are cantoning pilasters with intersecting corbels held by a high *vira-kantha.* The central pair constitute sham niches within *nakula-pada* pilasters devoid of *torana.* Similar pilastered decor is continued on the *ardha-and maha-mandapa* exteriors also. The *valabhi* on the inside has the *hamsavari,* a Ganga characteristic, while on the exterior, the *Ramayana* episodes are panelled horizontally, the overhead *kapota* carrying ornamental *kudus.* The door-frame simulates the Chalukyan type *trisakha,* with *sala-bhanjikas* at the bottom and Gajalakshmi at the lintel. Among the-images the eight-handed Mahishamardini is unique, as its oval *prabha* shows in miniature form of the *ashta-dikpalakas* of mounts. This and the robustness of the figure indicate clear Ganga-Nolamba features.

The Siddhesvara temple at Algodu, in ruined condition, revealed a square *garbha-griha* fronted by a *navaranga* on an *adhishthana* with a simple *tripatta-kumuda.* Stone inscriptions of the times of Sripurusha (A.D. 725-788) as well as Rachamalla I (A.D. 817-853) speak of the additions like the northern and southern porched entrances. The *navaranga* pillars exhibit an early form with a square *pitha* and high base, shaft having a *padmadala-kattu,* a circular part and well-defined *mala-sthana, padma-bandha,* plain *kalasa, tadi,* subdued *kumbha,* broad *padma* supporting a square *phalaka* which carried a double-armed roll-corbel.

Talakad, known as Talavanapura, Tarekad or Talakkad in early Ganga records was famous as the capital of the Western Gangas, and has several mounds and standing temples, many of them engulfed by the sand-dunes. The association of the place is attested to by a few donatory records of the time of Sripurusha (A.D. 725 and Rachamalla III (A.D. 925-935).

Two extant temples, Patalesvara and Maralesvara in their original layout, assignable to the times of Nitimarga (A.D. 853-869), enjoyed Chola patronage. They underwent wholesale renovation in later periods, particularly the brick *sikharas.* In both the examples the flat-

roofed *maha-mandapas* appear to have undergone renovations during the Chola period. The *adhishthanas* of the square *garbha-griha* and *ardha-mandapa* in both the temples preserved their original features, and interestingly revealed two distinct types: while in the Patalesvara it is of the *pada-bandha* type, comprising a bold *vritta-kumuda, kantha, kampa* and *pattika* with *vyala* rafter, at Maralesvara it partakes of a *kapota-bandha* variety. Here the double rafter ends tied with *vyala* or *makara-mukha,* cross-terminals are prominent and the *kapota* shows offset bays and recessions providing the necessary base for the elevational components over the *bhitti* as well as *vimana talas.* As it stands, the entire superstructure above the *vyala* rafter course is plain and raised during the Chola period. The *navaranga* pillars and pilasters within the *maha-mandapa* are like the ones at Narasamangala. A few loose sculptures in the *mandapa* viz., four-handed Mahavishnu with *prayoga-chakra,* Durga in *tribhanga* over the horned-head of the Mahisha, and Karttikeya in the Maralesvara temple, the Dakshinamurti with *ardha-yogapatta,* Trimukha Brahma, Simhavahini-Durga and Bhikshatana in Patalesvara are fine specimens of Ganga art and display the linear and expressive Pallava characteristics. The occurrence of an image of Parsvanatha (pl. XXXII B) under the *pipal* tree, closer to the huge tank, where traces of temple ruins and hero-stones are to be seen, might suggest the association of the site with Vijaya Jinalaya of the time of Rakkasa Ganga (A.D. 985-1074), the last known Ganga ruler. A few other Jaina images as well as the inscribed stones bearing the records of Sivamara II (A.D. 788-812), and Ereyappa Ganga in Arkesvara temple at Vijayapuri and ruined fort respectively are significant. The Gaurisankara temple, almost buried, southwards of Vaidyanathesvara, close to the river Kaveri has a few architectural members exposed to view. The pillar, with circular shaft, highly decorated *mala-sthanas* with dancers, musicians, scrolls, elongated *kalasa* with *patra-latas* marking the octagonal sections suggest Ganga-Nolamba order.

Muguru has revealed a Jaina *basadi,* which in all probability, is the *Sivalaya* mentioned in the Ganga inscriptions of *circa* tenth century A.D. The unit consists of a spacious square *garbha-griha,* a narrow *antarala* connecting a large *maha-mandapa.* The structure above the *prati* along with the *kakshasana* arrangement and a balustraded central *sopana* to the *maha-mandapa* entrance, has undergone renovation during the times of the Hoysalas and even later. The pillars of the *navarangas* are plain having a square moulded *pitha,* octagonal section, and circular shaft with *padma-bandha.* Plain *kalasa, tadi* cushion-shaped *kumbha* and a broad *phalaka* hold the corbel. The *adhishthana* is of a simple *prati-bandha* type. The place has retained its pre-eminence as a Jaina centre during the Hoysala period as well, and fresh images of Parsvanatha and Adinatha were consecrated.

Though the temple at Ganganuru has lost all its original features, the two-handed image of Surya standing on a high *padma-pitha* inside the Nilkanthesvara temple confirms the epigra-phical reference to the God Adityabhatara of the time of Ganga king Satyavakya Permanadi.

IX. PRESERVATION OF MONUMENTS

MONUMENTS OF NATIONAL IMPORTANCE

CENTRAL CIRCLE

Madhya Pradesh

1. DANTESVARI DEVI TEMPLE, DANTEWARA, DISTRICT BASTAR.—Arrangements were made to fix the grilled doors and windows including iron mesh to the existing wooden *jaffries* of the *mandapa* and *jagamohana* of the temple with a view to strengthening the security measures of the loose sculptures kept inside.

2. BHIMA-KICHAKA RUINS, MALHAR, DISTRICT BILASPUR.—While carrying out a clearance-work at the site a plinth of an early medieval temple and collapsed architectural members of the *sikhara* were exposed (pi. XXXIV) along with some undeciphered inscriptions.

3. KESAVA-NARAYANA TEMPLE, SEORINARAYAN, DISTRICT BILASPUR.—The original brick mouldings and carvings were exposed by removing the plastered surface, and overhanging architectural members inside the *garbha-griha* were given proper support. Further, the work of relaying of stone-paved flooring and repair to stone-built compound wall were completed.

4. ANCIENT TEMPLES AND MOUNDS, TUMAN, DISTRICT BILASPUR.—The clearance-work at the site yielded remains of an ancient temple which include *garbha-griha, mandapa* and *pradakshina-patha.* The work is in progress.

5. BRAHMA TEMPLE, KHAJURAHO, DISTRICT CHHATARPUR.—The bulged-out and tilted portions of the platform and plinth were reset.

6. WESTERN GROUP OF TEMPLES, KHAJURAHO, DISTRICT CHHATARPUR.—The pathway around the temples was laid with *morum,* and the angle iron posts of the fencing were painted. The work of providing floodlights at the temples has been initiated by the Central Public Works Department on behalf of the Survey.

7. BIR SINGH'S PALACE, DATIA, DISTRICT DATIA.—In continuation of last year's work *(1978-79,* p. 119), the missing and broken balconies and brick *jalies* were restored. The decayed concrete flooring of the passage was dismantled and relaid with fresh concrete,

8. ROCK-CUT CAVES, BAGH, DISTRICT DHAR.—In continuation of the last year's work *(1978-79,* p. 119), the removal of fallen debris (chunks of rock and silt) from Caves 4 to 7 remained in progress. In order to check the water percolation through the rock-surface, arrangements were made to provide R. C. C. casing on the exterior of the eastern walls of Caves 2 and 4.

9. LAT-KI-MASJID, DHAR, DISTRICT DHAR.—The decayed flooring in the terrace was removed and made watertight by providing fresh lime-cement concrete. A damaged portion of the courtyard was paved with 75-mm thick limestone slabs. Besides, cracks in the dome were filled with cement-mortar.

10. DARYA KHAN'S SARAI, MANDU, DISTRICT DHAR.—In continuation of last year's work *(1978-79,* p. 120), the clearance of debris in and around the *sarai* brought to light a number of cells and platforms. The broken top of the walls was made watertight.

11. DARYA KHAN'S TOMB, MANDU, DISTRICT DHAR.—The decayed lime concrete in the terrace was removed and fresh concrete after filling the cracks was laid. The damaged rubble masonry of the parapet wall including plain and ornamental plaster of the domes were repaired.

12.GADA SHAH'S SHOP, MANDU, DISTRICT DHAR.—The original floor and overhanging arches were exposed by removing the debris. The dome at the south-eastern corner was strengthened by reconstructing vaults and providing iron rods to hold the bifurcated masonry.

13. HATHIPOL GATE, MANDU, DISTRICT DHAR.—In continuation of last year's work *(1978-79,* p. 120), the open joints of the compound wall and bastion were filled with lime mortar by keeping the joints recessed. Besides, the scattered fragments of elephant figures were reassembled and joined with copper clamps.

14. TAVELI-MAHAL, MANDU, DISTRICT DHAR.—The decayed lime plaster of the basement cells was removed and replastered. The work is in progress.

15. SITA DEVI TEMPLE, DEORBIJA, DISTRICT DURG.—The temple was fenced by a rubble masonry wall.

16. HAMAM KHANA, CHOWK MOHALLA, BURHANPUR, DISTRICT EAST NIMAR.—The debris accumulated inside the apartments was removed and cavities were underpinned. Besides, the area was enclosed with a barbed-wire fencing.

17. TOMB OF SHAH NAWAZ KHAN, BURHANPUR, DISTRICT EAST NIMAR.—The decayed lime-concrete platform to the north and east of the tomb was dismantled and relaid with fresh concrete.

18. BADA MADARSA, CHANDERI, DISTRICT GUNA.—The work of restoration of the missing arches in the corridor, capitals of the pillars, replacement of missing lintels and columns, has been taken up. The work is in progress.

19. KOSHAK-MAHAL, CHANDERI, DISTRICT GUNA.—The bulged-out and overhanging facing stones were dismantled and are being reset with copper clamps.

20. MASJID (COMPLEX OF TOMB OF MUHAMMED GHAUS), GWALIOR, DISTRICT GWALIOR.—The decayed lime-roofing was removed and relaid with fresh mortar.

21. SAS-BAHU TEMPLE, GWALIOR, DISTRICT GWALIOR.—The area around the temple has been fenced.

22. CHAUSATH YOGINI TEMPLE, BHERAGHAT, DISTRICT JABALPUR.—In order to check •'encroachment, the work of fencing the entire hillock, on which the temple stands, has been taken up.

23. GAURI SANKAR TEMPLE, BHERAGHAT, DISTRICT JABALPUR.—The work of removing the lime-plaster from the interior of the *garbha-griha* has been completed.

24. VISHNU-VARAHA TEMPLE, BILHERI, DISTRICT JABALPUR.—The damaged carvings and moulded plaster-work over the dome were removed and reproduced matching with the original.

25. BEGAM-MAHAL, CHAUGAN RYOTARI, DISTRICT MANDLA.—A barbed-wire fencing was provided around the Mahal.

26. BRAHMANICAL ROCK-CUT TEMPLE, DHAMNER, DISTRICT MANDSAUR.—The work of providing concealed girders in the cracked rock-cut lintels of the *mandapa has* been started.

27. BUDDHIST CAVES, DHAMNER, DISTRICT MANDSAUR.—In continuation of previous year's work *{1978-79,* p. 122), the relaying of concrete (in 10 cm thick *cement-surkhi)* and giving a finish with cement-*surkhi*-pebbles after removing the pulverized mortar in the roof of Caves 1 to 11 have been completed. The work is in progress in the remaining caves.

28. YASHODHARMAN'S PILLAR OF VICTORY, SONDNI, DISTRICT MANDASUR.—The broken fragments of sculptures were fixed by inserting stainless steel rods, and joints treated with araldite and M seal putty (pl. XXXV).

29. BHAND DEVAL TEMPLE, ARANG, DISTRICT RAIPUR.—-In continuation of last year's work *(1978-79,* p. 122), besides providing flag-stone flooring to the platform, the decayed plaster over the sanctum was removed and fresh plaster was laid.

30. RAMCHANDRA TEMPLE, RAJIM, DISTRICT RAIPUR.—In continuation of:' last year's work *[1978-79,* p. 122), the restoration of the boundary wall was completed.

31. SAIVITE TEMPLE, BHOJPUR, DISTRICT RAISEN.—'The unfinished work of providing flag-stone flooring is under completion.

32. BARADARI FORT, RAISEN, DISTRICT RAISEN.—The broken boundary wall was repaired. The decayed and sunken approach roads from Delhi and Chapra gates were reconditioned for easy access to the fort.

33. PAMEYA TEMPLE, FORT, RAISEN, DISTRICT RAISEN.—In continuation of previous year's work *(1978-79,* p. 122), the courtyard was provided with a layer of 9-cm thick lime concrete.

34. MONASTERY, SONARI, DISTRICT RAISEN.—The monastery was made clear by removing the stone debris, and steps were taken up to preserve the bulged-out walls. The work is in progress.

35. THE WALLS OF. CITADEL, KHIMLASA, DISTRICT SAGAR.—In continuation of last year's work *(1978-79,* p. 123) the collapsed portion of the citadel wall towards the west was restored by repeating *kanguras* or merlons etc.

36. CHAUBARA DERA NO. 2, UN, DISTRICT WEST NIMAR.—The old and dilapidated barbed-wire fencing was replaced by a brick dwarf wall-*cum* -barbed wire fencing around- the site.

DELHI CIRCLE

Delhi

37. BARADARL, HUMAYUN'S TOMB, DELHI.—Besides grouting the cracks, geometrical patterns in the ceiling, niches and arches were reproduced as per the original.

38. BARE KHAN-KA-GUMBAD, DELHI.—The damaged rubble masonry was underpinned and arches and niches to the north-eastern and western sides were repaired. The decayed and pulverized veneer stones (moulded) of the plinth and *chhajja* stones of the *chhatris* were replaced. The out-of-plumb stone pillars and brackets of the *chhatris* were also attended.

39. JANTAR MANTAR, DELHI.—The graduation of Rama-yantra (pl. XXXVII) and Jai Prakash-yantra were repaired after attending the structure with lime-cement mortar.

40. MAHAMUDI MOSQUE, DELHI.—The damaged and bulged-out rubble masonary of the enclosure wall was restored. Arches and jambs were reset matching with the original.

41. PURANA QILA, DELHI.—The dilapidated inner cells adjacent to the main gate (Sher Shah's Gate) and towards the south were thoroughly repaired. Apart from restoring the ornamental plaster and stucco medallions in the ceilings (pl. XXXVIII) and niches, the cracks were grouted and made watertight with lime-cement mortar.

42. QUDSIYA GATE, DELHI.—To save the structure from further decay underpinning work in *lakhauri* brick work was done matching with the original (pl. XXXVI).

Rajasthan

43. FORT, BHARATPUR, DISTRICT BHARATPUR.—The work of underpinning and pointing of rubble masonry of the inner fortification wall is in progress.

44. JAWAHAR BURJ, FORT, BHARATPUR, DISTRICT BHARATPUR.—The fallen wall and sunken pavement were restored to their original position. The work of dismantling the bulged-out portion of the moat-wall was completed and resetting is in progress.

45. DIG PALACES, DIG, DISTRICT BHARATPUR.—The work of underpinning and plastering of the lower portion of the Gopal Bhavan, facing the water tank, was completed.

EASTERN CIRCLE

Assam

46. ROCK-CUT FIGURES, KAMAKHYA HILL, DISTRICT KAMRUP.—The cracks and open joints in the figures were grouted and mended with lime mortar. In order to protect the images a fencing was provided at Kamakhya temple.

47. GHANSHYAM'S HOUSE, JAYASAGAR, DISTRICT SIBSAGAR.—The decayed flooring was reconditioned with lime concrete.

48. GROUP OF TEMPLES, JAYASAGAR, DISTRICT SIBSAGAR.—The work of providing aprons with brick-on-edge around the temples were completed.

49. SIBDOL, NEGHERETING, DISTRICT SIBSAGAR.—The vaulted roof was repaired and interior walls were replastered.

Orissa

50. BAKESVARA TEMPLE, BHUBANESWAR, DISTRICT PURI.—The missing carved stones of *jagmohana* were replaced (pl. XXXIX).

51. LINGARAJA TEMPLE, BHUBANESWAR, DISTRICT PURI.—Apart from filling the wide open joints, the *pidha* was repaired. The loose sculptures kept inside the temple-compound was provided with an enclosure.

52. SISIRESVARA TEMPLE, BHUBANESWAR, DISTRICT PURI.—The missing ornamental designs were reproduced.

53. SUN TEMPLE, KONARAK, DISTRICT PURL—The work of restoring the fallen stones to their original position has been completed (pl. XL).

54. JAGANNATHA TEMPLE, PURI, DISTRICT PURL—The exposed carvings after removal of the plaster were satisfactorily preserved. At Lakshmi temple the missing carved portions were reproduced.

Tripura

55. ROCK-CUT SCULPTURES, UNAKOTI, DISTRICT NORTH TRIPURA.—With a view to providing an easy ascent to the site a flight of steps (80 cm wide), in brick masonry, was laid.

56. CHATURDASA-DEVATA TEMPLE, RADHAKISHOREPUR, DISTRICT UDAYAPUR.—The roof was relaid with fresh lime-concrete, and rank vegetation in and around the temple removed. A flight of steps was provided in order to have an easy access to the shrine.

West Bengal

57. TOMB OF BARHRAM SAKKA, BURDWAN, DISTRICT BURDWAN.—After replacing the damaged and worn-out beams, including grouting of joints and cracks, the terraces were relaid with fresh lime-concrete.

58. SIVA TEMPLE, KALNA, DISTRICT BURDWAN.—Salt-affected bricks were replaced and replastered with lime-mortor in 1:2 proportion.

59. GUNEMANT MOSQUE, GAUR, DISTRICT MALDA.—The damaged floor was treated with lime-concrete after providing a brick soling.

60. FIRUZ-MINAR, GAUR, DISTRICT MALDA.—Apart from consolidating the. embankment around the *minor,* the flight of steps leading upstairs was renewed.

61. BARADARI MOSQUE, GAUR, DISTRICT MALDA!—The damaged floor of the corridor and wall-surfaces were treated with lime-concrete and brick-*surkhi* mortar respectively.

62. EKLAKHI MUSOLEUM, PANDUA, DISTRICT MALDA.—The wire-fencing around the monument was repaired.

63. ROOF OF MIRSAMANI, HAZARDUARI, DISTRICT MURSHIDABAD. — The terrace was renewed with lime-concrete.

64. TOMB AND MOSQUE OF ALIVARDI KHAN AND SIRAJ-UD-DAULA, KHUSBAGH, DISTRICT MURSHIDABAD.—The decayed lime-plaster flooring of the terraces was removed and fresh concrete laid.

65. IMAMBARA, MURSHIDABAD, DISTRICT MURSHIDABAD.—Damaged and worn-out beams of the ceiling of the first floor were replaced.

MID-EASTERN CIRCLE

Bihar

66. EXCAVATED REMAINS OF BUDDHIST MONASTERY, ANTICHAK, DISTRICT BHAGALPUR.—The.work of repairing the missing portion, facing the western shrine, in. brick masonry was completed. Keeping intact the base of the original stone columns, the floor was provided with lime-concrete. The pathway in between the main, gateway and the stupa was laid with brick-edging following the original plan. The open-to-sky eastern shrine of the main stupa was provided with a tile-shed. The work of providing a barbed wire fencing around the acquired land is in progress.

67. ROCK SCULPTURES, PATHARGHATTA, DISTRICT BHAGALPUR.—The site was provided with a barbed wire fencing.

68. RUINED FORTRESS, CHANKIGARH, DISTRICT CHAMPARAN.—The work of providing a pathway to the monument with brick-on-edge and spread with *morum* was completed and fortress cleared of all rank vegetation.

69. BUDDHIST STUPA, KESARIA, DISTRICT CHAMPARAN.—The damaged barbed-wire fencing around the site was repaired and stretched in the missing area.

70. EXCAVATED REMAINS, NALANDA, DISTRICT NALANDA.—The work ol resetting and watertightening of the loose brick masonry together with reconditioning of floor remained in progress at Temples 3 and 4 as also at Sarai mound. Besides, a tile-shed was provided over the shrine at Sarai mound.

71. JIVAKAMRAVANA MONASTERY, RAJGIR, DISTRICT N ALAND A.—The loose and dislodged random rubble masonry was reset in *lime-surkhi* mortar and finished with recessed pointing.

72. MAHADEVA TEMPLE, RAJGIR, . DISTRICT NALANDA.—Besides attending to the dislodged brick masonry, the floor was reconditioned with fresh lime-concrete after dismantling the old one.

73. UDAYAGIRI, RAJGIR, DISTRICT NALANDA.—The work of resetting a dislodged portion of a bastion remained in progress.

74. VIPULAYIRI, RAJGIR, DISTRICT NALANDA.—The dislodged stone masonry of one of the bastions of the old fort wall was reset in *lime-surkhi* mortar and finished with recessed pointing.

75. EXCAVATED REMAINS, KUMRAHAR, DISTRICT PATNA.—The work of building a boundary wall to the north of the site is in progress.

76. SHER SHAH SURI'S TOMB, SASARAM, DISTRICT ROHTAS.—The silt deposits from the intercepting drains connected with the tank around the tomb was cleared.

77. JAMI-MASJID, ' HADAF, DISTRICT SANTHAL PARGANA.—Decayed lime-concrete flooring of the verandah was removed and relaid in fresh mortar.

Uttar Pradesh ■

78. KHUSRUBAGH, ALLAHABAD, DISTRICT ALLAHABAD.—The wide and open joints in the rubble masonry of the eastern enclosure wall were filled in with lime-cement mortar. Recessed pointing was done after removing the dead mortar. The work is in progress. The decayed plaster of the wall connected to the well (feeding the ancient fountains) was removed and fresh *lime-surkhi* plaster was laid.

79. EXCAVATED REMAINS, KAUSAMBI, DISTRICT ALLAHABAD.—In continuation of the last year's work *(1978-79,* p. 127) the laying of a concrete apron and intercepting drain around the Asokan pillar to prevent accumulation of rain water were completed.

80. GARHWA FORT, SHEORAJPUR, DISTRICT ALLAHABAD.—The removal of debris around the structural remains along with rank vegetation was carried out.

81. RAJA MANSINGH'S PALACE, FORT, KALINJAR, DISTRICT BANDA.—In continuation of the last year's work *(1978-79,* p. 127) the structural repairs to the palace were carried out.

82. BUDDHIST REMAINS, KUSHINAGAR., DISTRICT DEORIA.—The excavated structures of Monasteries G, D, E and H were made watertight by dismantling and resetting three top brick-courses.

83. NIRVANA STUPA, KUSHINAGAR, DISTRICT DEORIA.—In continuation of the last year's work *(1978-79,* p. 127) the work of restoration of the superstructure is being attended to.

84. STONE PILLAR, LATIYA, DISTRICT GHAZIPUR.—A barbed-wire fencing with a turn-style gate was provided- around the protected site.

85. FORT, JAUNPUR, DISTRICT JAUNPUR.—The work of restoring the fallen bastion in ashlar masonry is in progress. Protected area to the north of the fort was provided with a dwarf wall-cum-barbed wire fencing. Besides the eroded ground to the north-west of the fort was provided with a retaining wall in brick masonry.

86. JHANJHARI MOSQUE, DISTRICT JAUNPUR.—The floor and the compound wall of the mosque were thoroughly made good by removing dead mortar, besides repairing the barbed-wire fencing.

87. RAUZA OF SHAH FIRUZ, JAUNPUR, DISTRICT JAUNPUR.—The work of relaying the floor by fresh lime concrete after dismantling the decayed one was carried out. Moreover, the barbed wire fencing and the door to the *rauza* were repaired.

88. EXCAVATED REMAINS, SARNATH, DISTRICT VARANASI.—Excavated remains of Kumaradevi monastery were reset and made watertight. The ancient covered drain was provided with stone slabs wherever missing and the pathway around was laid with lime-concrete.

89. DHARARA MASJID, VARANASI, DISTRICT VARANASI.—The work of grouting the cracks on the wall and ceiling is in progress.

MID-SOUTHERN CIRCLE

Karnataka

90. PANCHALINGADEVA TEMPLE, HUBLI, DISTRICT BELGAUM.—Besides making the roof watertight the missing and broken ceiling slabs were replaced.

91. ANANTASAYANA TEMPLE, ANTANTASAYANA GUDI, DISTRICT BELLARY.—The cracked beams were replaced by new ones matching with the original.

92. ACHUTARAYA TEMPLE, HAMPI, DISTRICT BELLARY.—The work of reconstruction of the fallen portions of the *mandapa* on the eastern side is in progress.

93. EXCAVATED MINT AREA, HAMPI, DISTRICT BELLARY.—After making the excavated remains watertight the works of edging, filletting and pointing of walls with toned mortar including fixing of broken stones were done.

94. MAHANAVAMI-DIBBA, HAMPI, DISTRICT BELLARY.—Missing stone beams on the main entrance were replaced.

95. PATTABHIRAMA TEMPLE, HAMPI, DISTRICT BELLARY.—The work of watertightening the leaky terrace is in progress.

96. UNDERGROUND TEMPLE, KAMALAPURA, DISTRICT BELLARY.—The accumulation of silt and rain water inside was removed.

97. CHIKKIGUDI, AIHOLE, DISTRICT BIJAPUR.—The silt deposit around the temple was removed and the work of providing drain to let out rain water has been taken up.

98. GALAGANATHA GROUP OF TEMPLES, AIHOLE, DISTRICT BIJAPUR.—The sunken stone-slab flooring in Shrine 15 was removed and relaid. Further, the surroundings were cleared to keep them tidy.

99. GOUDERGUDI, AIHOLE, DISTRICT BIJAPUR.—Missing and broken stone slabs of the terrace have been replaced and made watertight (pl. XLI).

100. HUCHCHIMALLIGUDI, AIHOLE, DISTRICT BIJAPUR.—The protected area around the temple was provided with a compound wall towards the south and west.

101. RAVANAPHADI, AIHOLE, DISTRICT BIJAPUR.—The dilapidated retaining wall was dismantled and reconstructed matching with the original rock surface.

102. BAD AMI CAVE 1, BAD AMI, DISTRICT BIJAPUR.—The protected area around the site was fenced.

103. BANASANKARIDEVI TEMPLE, AMARGOL, DISTRICT DHARWAR,—The damaged and missing portion of the plinth was repaired.

104. JAINA TEMPLE, LAKKUNDI, DISTRICT DHARWAR.—The construction of a retaining wall towards the south is in progress.

105. KEDARESVARA TEMPLE, HALEBID, DISTRICT HASSAN.—The out-of-plumb boundary wall was dismantled and reset.

106. LAKSHMINARASIMHA TEMPLE, NUGGEHALLI, DISTRICT HASSAN.—The out-of-plumb *yajnasala* and *pakasala* were reset.

107. SADASIVA TEMPLE, NUGGEHALLI, DISTRICT HASSAN.—Repairs to the roof of the *nandi-mandapa* and the *maha-mandapa* have been taken up.

108. GOMMATESVARA STATUE COMPLEX, SRAVANABELAGOLA, DISTRICT HASSAN.---- The damaged stucco figures in the niches of the parapet in the inner courtyard and the store-room in the outer courtyard were repaired. The sunken platform of the *mandapa* on either side of Akhanda-bagilu was relaid as per the original and the area cleared of all debris.

109. KESAVA TEMPLE, NAGAMANGALA, DISTRICT MANDYA.—Stone slabs of the *dipa-sthamba* which had gone out of plumb were reset.

110. GUMBAZ, SRIRANGAPATNA, DISTRICT MANDYA.—The terrace of the Khan-khana was watertightened by laying two courses of flat tiles plastered with lime.

111. SRIKANTESVARA TEMPLE, NANJANGUD, DISTRICT MYSORE.—The decayed plaster of the niches in the outer parapet towards the north was replastered after attending to the damaged portions. Also the underground drain was cleared and reconditioned.

112. KESAVA TEMPLE, SOMNATHAPUR, DISTRICT MYSORE.—The cracked beams, including ornamental ones, in the southern corridor of the temple were replaced.

113. VAIDYESVARA TEMPLE, TALKAD, DISTRICT MYSORE.—The work of watertightening the terraces of the *maha-dvara,* the Srikanthesvara shrine and the northern *mandapa,* including the replastering on the *vimana,* has been carried out. The thick lime-coating on the walls and pillars of *mukha-mandapa* and concrete floor which covered the basement mouldings were removed to expose the original surface. The decayed plaster on the compound wall was removed and replastered.

114. NAMBI NARAYANA TEMPLE, TONNUR, DISTRICT MYSORE.—Apart from replacing the ornamental basement of the Amman shrine, the fallen superstructure of *the yajnasala* has been restored. Further, the floor of the *jagati* and *maha-mandapa* was paved with stone slabs. The broken outer compound wall towards north was rebuilt.

NORTHERN CIRCLE *Uttar Pradesh*

115. FORT, AGRA, DISTRICT AGRA.—Missing and decayed floral designs with convex glass mirrors in the southern room of Sheesh Mahal were restored (pl. XLII). In one of the bays the missing red sandstone flooring was replaced, while red sandstone facade, brackets and *chhajjas* of Diwan-i-Am were treated with special lime-mortar. In Jahangiri Mahal the missing dado panel depicting geometrical designs was restored matching with the original.

116. KALA-GUMBD, AGRA, DISTRICT AGRA.—The decayed roof and the platform were relaid with fresh lime-concrete, while the dome was replastered after removing the dead one.

117. GATEWAY AND KATRA, RAMBAGH, AGRA, DISTRICT AGRA.—The work of underpinning and pointing to the pillars was carried out.

118. RAM BAGH, AGRA, DISTRICT AGRA.—The undermined portions in the compound wall were underpinned and joints provided with recessed points.

119. DAKHINI DARWAZA, TAJ GANJ, AGRA, DISTRICT AGRA.—Besides attending to the cracks on the roof, the work of underpinning and plastering on the southern facade and the room on the first floor was caried out.

120. KHAN-I-ALAM, TAJ MAHAL, AGRA, DISTRICT AGRA.-of -Flood-affected walls and arches aqueduct were underpinned and pointed.

121. TAJ MAHAL, AGRA, DISTRICT AGRA.—Decayed and missing veneer stones, both plain and moulded, and *dasa* stones of the outer facade to the eastern enclosure wall were replaced. Besides attending to the damaged portion near the north-western bastion, the cracks in the underground cells towards the river were grouted and wall-surface replastered. Obliterated and damaged geometrical and floral designs in Mehman-khana were reproduced in patches matching with the original (pl. XLIII), while the damaged wire-netting in the central was repaired. The broken and missing red sandstone railings around the well to the north-western side of the central tank and towards the Mehman-khana were restored (pl. XLIV).

122. BURIYA-KA-TAL, ETMADPUR, DISTRICT AGRA.—The brick masonry wall around the tank was underpinned with *lakhauri* bricks.

123. GROUP OF MONUMENTS, FATEHPUR SIKRI, DISTRICT AGRA.—The collapsed part of the city-wall near Chor Darwaza was repaired together with embattled parapets. The work of restoration of the collapsed roof of the treasury was continued and missing *chhajja* of the eastern and southern parts, including the pavement stones of the southern verandah, were replaced. The work of replacing broken lintels and brackets in one of the bays of the Diwan-i-Am was also completed. Besides underpinning, the work of filling the joints, changing the missing and decayed stone slabs etc., was attended to at Rani Hada-ka-mahal, tomb of Ibrahim at Rasulpur, Lai Darwaza, Chandrapol gate, Baiju-ka-Makan, Tehra Darwaza and the *baradari.*

124. MARIAM'S TOMB, SIKANDRA, AGRA, DISTRICT AGRA.—The domes of corner *chhatries* towards the south-west and the north-east were plastered. Besides, stone flooring of Naqqar Khana was pointed.

125. BEGUM'S MASJID, AONLA, DISTRICT BAREILLY.—The work of underpinning, apart from, filling the deep joints, was carried out and the uneven terrace reconditioned.

126. TOMB OF HAFIZ-UL~MULK| RAHMAT KHAN, BAREILLY, DISTRICT BAREILLY.—The decayed lime-plaster of the interior walls was removed and replastered after attending to the deep cracks in the dome. Apart from providing door-shutters, the graves to the west of the tomb were treated with fresh lime-concrete.

127. PATHARGARH FORT, NAJIBABAD, DISTRICT BIJNOR.—-Bulged-out and dilapidated stone masonry to the west of the tank was reset matching with the original.

128. ROCK-EDICT OF ASOKA, KALSI, DISTRICT DEHRA DUN.—The structure over the inscribed rock was repaired.

129. EXCAVATED SITE OF VIRBHADRA, RISHIKESH, DISTRICT DEHRA DUN.—The exposed masonry was made watertight.

130. TEMPLE, KABRAI, DISTRICT HAMIRPUR.—Bulged-out and sunkun stone masonry to the north and south of the *ghats* had been reset, while recessed pointing was carried out. Further, the debris around the plinth was removed.

131. ELEPHANT FIGURES, MAHOBA, DISTRICT HAMIRPUR,—The figures were repaired in. dry masonry after removing the debris.

132. TEMPLE, SIJARI, DISTRICT, HAMIRPUR.—Buldged-out stone masonry of the *ghats* was reset and joints were recess-pointed.

133. BRAHMANICAL AND JAINA TEMPLES, SUKURA, DISTRICT HAMIRPUR.—After clearing the debris around the temples, the loose pavement stones were reset.

134. JARAI-KA-MATH, BARUA SAGAR, DISTRICT JHANSI.—The basement of the *mandapa* was exposed after removing debris from in and around it. In order to stop percolation of water into the monument a flag-stone apron was provided.

135. RAJA GANGADHAR RAO'S CHHATRI, JHANSI, DISTRICT JHANSI.—Besides restoring the missing flag-stone pavement, the decayed and salt-affected interior surface of the compound wall was removed and replastered. The garden around the monument was provided with barbed wire fencing.

136. RANI LAKSHMI BAI PALACE, JHANSI, DISTRICT JHANSI.—The decayed and salt-affected ornamental plastered surface, door-jamb and panels were removed and restored in conformity with the original.

137. BELMORI GROUP OF TEMPLES, CHANDPUR, DISTRICT LALITPUR.—The collapsed *mandapa* of the northern temple was restored (pl. XLV).

138. VARAHA GROUP OF TEMPLES, CHANDPUR, DISTRICT LALITPUR.—The flooring was reconditioned after removing the fallen debris. Besides, dislodged stones of the small shrines were reset and joints watertightened,

139. VISHNU AND LAKSHMINARAYANA SHRINES, CHANDPUR, DISTRICT LALITPUR,—The buried plinth was exposed and the entire structure was made watertight after removing the debris (pl. XLVI).

140. GUPTA TEMPLE, DEOGARH, DISTRICT LALITPUR.—The clearance of debris towards the west and north of the temple brought to light the plinth including some loose sculptures.

141. VARAHA TEMPLE AND GHATS, DEOGARH, DISTRICT LALITPUR.—pissing projected plain *dasa* was restored to the floor. Apart from providing direction notice boards in stone, and the approach roads, the Nahar Ghati, Rajghati and Siddha-ki-ghati were repaired.

142. KURAIYA BIR TEMPLE, KUCHDEN, DISTRICT LALITPUR,—With, a view to protecting the temple from river erosion, a retaining wall measuring 35 x 5 m, in red sandstone, was constructed. .

143. BANSA BUILDING, LALITPUR, DISTRICT LALITPUR.—Besides raising the compound wall, the site was made neat and tidy after removing the debris. The joints of the floor and *chhajja* were pointed. The missing V-shaped stones were restored with new ones.

144. MAHADEO TEMPLE, MADANPUR, DISTRICT LALITPUR.—The entire temple was dismantled and reset to rectify the fault in the foundation.

145. AMJAD ALI SHAH'S MAUSOLEUM, LUCKNOW, DISTRICT LUCKNOW.—The work of re producing plaster-work on the first gateway, both plain and ornamental, was continued:

146. IMAMBARA OF ASAF-UD-DAULA, LUCKNOW, DISTRICT LUCKNOW.—While attending the damaged brick work and plastering of the second entrance the floral designs in stucco on the pillars in the main hall were also repaired.

147. JAMI-MASJID, HUSAINABAD, LUCKNOW, DISTRICT LUCKNOW.—The decayed and sunken portions were reconcreted after removing the rank vegetation and grouting the cracks.

148. KAZMAIN BUILDINGS, LUCKNOW, DISTRICT LUCKNOW.—The damaged brick masonry walls were underpinned and replastered.

149. TOMB, MUSABAGH, LUCKNOW, DISTRICT LUCKNOW.—The cracks and joints in the roof and wall were repaired after the removal of rank vegetation. Fresh concrete was also laid on the roof to ensure proper drainage.

NORTH-WESTERN CIRCLE

Haryana

150. FIRUZ SHAH'S MOSQUE, HISSAR, DISTRICT HISSAR.—In continuation of the last year's work *(1978-79,* p. 133), the removal of dead mortar from the roof and floor of the verandah and relaying both with fresh lime-concrete were completed. The fallen and out-of-plumb parts of the enclosure wall were reconstructed with *lakhauri* bricks keeping the joints recessed.

151. FIRUZ SHAH'S PALACE, HISSAR, DISTRICT HISSAR.—In continuation of the last year's work *(1978-79,* p. 133), the roof of the palace was made watertight after removing the decayed lime-concrete.

152. KOS-MINAR AND GATEWAYS, GHARAUNDA, DISTRICT KARNAL.—The square platform in *lakhauri* brick work was restored in *lime-surkhi* mortar. The fallen and missing patches of brickwork in wall and arches of the gateways of the Sarai were also resored with *lakhauri* brick and lime-cement mortar.

153. CEMETERY, KARNAL, DISTRICT KARNAL.—A lime-concrete pathway was provided in the middle of the cemetery apart from removing the rank vegetation.

154. CHURCH TOWER, KARNAL, DISTRICT KARNAL.—Collapsed roof of one of the chambers of the tower was restored as per the original.

155. IBRAHIM LODI'S GRAVE, PANIPAT, DISTRICT KARNAL.—In continuation of the last year's work *(1978-79,* p. 134), the re-flooring and restoration of the missing wall of the platform were carried out.

156. KABULIBAGH MOSQUE, PANIPAT, DISTRICT KARNAL.—In continuation of the last year's work, the drum of the main dome was replastered with lime-s*urkhi* -mortar after removing the dead one. Moreover, petty repairs were carried out on the domes and outer walls.

157. SHEIKH CHILLI'S TOMB, THANESAR, DISTRICT KURUKSHETRA.—The marble veneer on the extrados of the dome was made watertight after removing the rank vegetation. The terrace around the drum was provided with lime-cement concrete by giving a desired slope to let out the rain water. These apart, the joints of the marble veneer over the drum along with *chhajjas* were treated with white cement mortar.

158. MADARASA, SHEIKH CHILLI'S TOMB, THANESAR, DISTRICT KURUKSHETRA.—The decayed *lime-surkhi* plaster over the outer walls of the courtyard was removed and replastered after raking and washing the joints of the brick masonry. Further, the ornamental and moulded plaster works of the facades were restored as per the original.

159. IBRAHIM KHAN'S TOMB, NARNAUL, DISTRICT MAHINDERGARH.—In continuation of the last year's work *(1978-79,* p. 134), the outer walls of the platform were pointed keeping the joints recessed and a part of the flooring was laid with stone slabs.

160. JAL-MAHAL, NARNAUL, DISTRICT MAHINDERGARH.—The missing stone slabs, projected brackets of the platform and the damaged plinth were restored. The platform was relaid with a fresh concrete after removing the dead mortar.

HIMACHAL PRADESH

161. LAKHNA DEVI TEMPLE, BHARMOUR, DISTRICT CHAMBA.—The work of restoring the out-of-plumb ashlar masonry of the compound wall remained in progress.

162. MANIMAHESHA TEMPLE, BHARMOUR, DISTRICT CHAMBA.—The out-of-plumb and dislodged walls on either side of the entrance to the temple was restored after dismantling the old one.

163. NARASIMHA TEMPLE, BHARMOUR, DISTRICT CHAMBA.—The out-of-plumb and dislodged parts of the plinth in ashlar masonry had been restored as per the original after providing a concrete base in the foundation.

164. CHAMUNDA DEVI TEMPLE, CHAMBA, DISTRICT CHAMBA.—In continuation of the last year's work *{1978-79*, p. 134), stone masonry in cement, including a retaining wall to the terrace of the temple in dry stone masonry, was constructed to check the erosion of the soil on the steep slope of the hill. Also, a flagstone flooring has been provided on the front terrace.

165. LAKSHMINARAYANA TEMPLE, CHAMBA, DISTRICT CHAMBA.—The dislodged and cracked retaining wall of the temple was repaired and strengthened by laying a concrete base to the foundation of the wall.

166. SAKTI DEVI TEMPLE, CHHATTRARI, DISTRICT CHAMBA.—The work of restoring the missing compound wall towards the north in random rubble stone masonry is in progress.

167. BAIJNATH TEMPLE, BAIJNATH, DISTRICT KANGRA.—The loose dislodged stone-built flight of steps leading to the water tank was restored after removing the rank vegetation.

168. ANCIENT FORT, KANGRA, DISTRICT KANGRA,—Apart from removing rank vegetation from the fort area, the retaining wall of the pathway leading to the palace and the temple-complex was restored.

169. ANCIENT FORT, NURPUR, DISTRICT KANGRA.—The collapsed portion of the fortification wall towards the east was rebuilt matching with the original.

170. KATOCH PALACE, TIRA-SUJANPUR, DISTRICT KANGRA.—The sunken floor of the *darbar* hall was relaid with fresh cement-lime mortar after removing thick vegetation.

171. VISVESVARA MAHADEO TEMPLE, BAJAURA, DISTRICT KULU.—A pathway paved with stone slabs was provided for the convenience of the visitors.

172. GAURISANKAR TEMPLE, DASSAL, DISTRICT KULU.—The worn-out and sunken stone slabs of the platform around the temple was dismantled and reconditioned over a fresh concrete base.

173. GAURISANKAR TEMPLE, NAGAR, DISTRICT KULU.—The worn-out and sunken stone slabs of the platform around the temple was dismantled and reconditioned over a fresh concrete base.

174. BUDDHIST MONASTERIES, TABO, DISTRICT LAHUL AND SPITI.—Special repairs to the following *gumphas* were undertaken during the year under review: (i) Chamolung; (ii) Dumlang; (iii) Sherlong; (iv) Gokhang; and (v) Kilkhang.

Leaking roofs of these *gumphas* were made watertight by laying alkathene sheets and fresh earth mixed with waterproofing solution after removing earth, decayed wooden rafters and planks. The surface was treated with cowdung and chaff in conformity with the original work. Furthermore, the decayed carved wooden brackets and beams were replaced.

175. BARSELA MEMORIAL, MANDI, DISTRICT MANDI.—The collapsed portion of the retaining wall towards the west was rebuilt and pointed on the inner sides. Besides fixing the memorial stones in vertical position, the entire area was provided with cement concrete flooring.

176. PANCHAVAKRA TEMPLE, MANDI, DISTRICT MANDI,—The leaking roof of the *mandapa* was made watertight by replacing the worn-out slabs with new ones. Apart from clearing the jungle-growth that had grown on the exterior of the *garbha-griha* and *sikhara,* the joints of the stone-work were made watertight with cement-lime mortar.

177. TRILOKINATH TEMPLE, MANDI, DISTRICT MANDI.—The decayed and worn-out slabs on the roof of the *mandapa* were replaced. The damaged sloping dwarf walls of the roof were reconstructed.

Jammu and Kashmir

178. ROCK-CUT SIVA TEMPLE, BUMZUVA, DISTRICT ANANTANAG.—In order to arrest soil erosion and landslide a retaining wall of random rubble stone masonry was constructed in front of the temple.

179. SUN TEMPLE, MARTAND, RANBIRPURA, DISTRICT ANANTANAG.—The missing stone slabs from the sanctum were restored after removing the debris.

180. VERINAG SPRING, VERINAG, DISTRICT ANANTANAG.—The damaged stone flooring of the passage to the north of the water-channel was reconditioned with new stone slabs.

181. SANKARA GAURISVARA TEMPLE, PAT AN, DISTRICT BARAMULLA.—The missing flight of steps at the entrance to the temple was restored in harmony with the original work.

182. PRATAPASVAMI TEMPLE, TAPPAR, DISTRICT BARAMULLA.—Barbed-wire fencing was provided to the protected area.

183. BUDDHIST MONASTERIES, ALCHI, DISTRICT LEH.—Two main *chhortens* which were completely dilapidated were restored after dismantling the stone work. Both the exterior and interior were replastered with fresh mud mortar mixed with cowdung and chaff. The flooring of the passage to the shrines was relaid with fresh mud-mortar. The shoulders of the *chhortens* were made watertight with alkathene sheets spread over the fresh earth. Fallen and dislodged portions of the buttress of Sumsuk and Nampernangzed *gumphas* were reconstructed in mud-mortar. The roof was made watertight by laying alkathene sheets and fresh earth sprayed over with mixture of hot bitumin and kerosene oil. The surface was finished with mud-plaster.

184. BUDDHIST MONASTERIES, HEMIS, DISTRICT LEH.—Besides restoring the fallen parapet wall on the roof, the western wall of the *gumpha* was replastered with fresh one mixed with sand, cowdung and chaff in two or more coats in conformity with the original. In order to check the seepage of rain water into the foundation and capillary action a catchment drain in stone, besides plinth-protection, was provided. It has checked further deterioration of the paintings on the walls.

185. OLD CASTLE, LEH, DISTRICT LEH.—The buldged-out and fallen portion of the retain ing wall on the hill slopes was restored, including the flight of the steps leading to the castle.

186. BUDDHIST MONASTERY, PHYANG, DISTRICT LEH.—The leaking roof of the monastery containing paintings on the ceiling was made watertight by spreading alkathene sheets covered with earth and finished with mud plaster mixed with cowdung and chaff.

187. BUDDHIST SITE, HARWAN, DISTRICT SRINAGAR.—In continuation of the last year's work *(1978-79,* p. 137), the clearance of debris around the buried shrine remained in progress.

188. AKHUN MULLA SHAH MOSQUE, SRINAGAR, DISTRICT SRINAGAR.—The flight of steps to the main entrance was restored and the joints of the brick masonry of the inner chamber were made watertight. Apart from removing vegetation from the enclosure wall and attending the wide open joints of the random rubble stone masonry, the fallen and disloged portions were restored and underpinned (pl. XLVII).

189. PARI-MAHAL, SRINAGAR, DISTRICT SRINAGAR.—The work of replacing the missing portions of the cusped arches and the retaining wall of the first terrace is in progress.

190. KATHI-DARWAZA, SRINAGAR, DISTRICT SRINAGAR.—The missing ornamental *dasa* stones of the *darwaza* were restored in conformity with the original.

191. DEVI BHAGVATI TEMPLE, BABORE, DISTRICT UDHAMPUR.—The broken and sunken floor of the *mandapa* was reconstructed with fresh dressed stone slabs, and fallen stone pillars were reset.

192. KALA DERA TEMPLE, BABORE, DISTRICT UDHAMPUR.—In continuation of last year's work *(1978-79,* p. 138), the dislodged and bulged-out wall of the *mandapa* of Temple 1 was reset, apart from placing the lintels and pillars in position. Dislodged and sunken platform of Temple 2 was relaid with old and new dressed stone slabs. The work is in progress.

193. GROUP OF TEMPLES, KRIMCHI, DISTRICT UDHAMPUR.—In continuation of last year's work *(1978-79,* p. 138), the *sikhara* was made watertight after removing the vegetation. The dislodged and out-of-plumb stone blocks including the weatherd moulded stone blocks of temple 3, were reset and also replaced wherever necessary after removing debris and vegetation.

194. FORT, RAMNAGAR, DISTRICT UDHAMPUR.—The long and wide cracks on the fortification wall was stitched with dressed stone blocks in cement-lime mortar after removing the rank vegetation and tree-roots (pl. XLVIII).

195. NAWA MAHAL, RAMNAGAR, DISTRICT UDHAMPUR.—The fallen and the out-of-plumb walls of stone masonry towards the rear side were restored after removing the fallen debris.

196. PALACE OF RAJA SUCHET SINGH, RAMNAGAR, DISTRICT UDHAMPUR.—The leaking roof-of the painted hall was made watertight by laying fresh cement-lime concrete.

197. RAJA AMAR SINGH'S PALACE, RAMNAGAR, DISTRICT UDHAMPUR.—In order to preserve the wall paintings, the percolation of rain water through the roof of the two chambers has been arrested by laying fresh cement-lime concrete.

_ 198. SAMADHI OF THE QUEEN OF RAJA SUCHET SINGH, RAMNAGAR, DISTRICT UDHAMPUR.—Leaking roof was made watertight by laying fresh cement lime concrete after removing the dead mortar around the dome.

Punjab

199. MUGHAL SARAI, AMANAT KHAN, DISTRICT AMRITSAR.—Dislodged and missing brickwork of the rear gate-house was restored with *lakhauri* bricks in *lime-surkhi* mortar.

200. FORT, BHATINDA, DISTRICT BHATINDA.—The inner bastion near the entrance was restored after making the core watertight (pl. XLIX). The top of the bastion was finished with modern brick pavement with flush-pointing in cement mortar. Apart from carrying out some repairs to the rampart, the damaged and sunken modern brick flooring of the passage inside the fort was relaid.

201. SHAMSHER KHAN'S TOMB, BATALA, DISTRICT GURDASPUR.—The dislodged enclosure wall in *lakhauri* brick work was restored.

202. DAKHNI SARAI, DAKHNI, DISTRICT JULLUNDUR.—In continuation of last year's work *{1978-79,* p. 139), the cavities in the rear enclosure wall were underpinned. Similar work is in progress on the inner side of the mosque.

203. MUGHAL BRIDGE, DAKHNI, DISTRICT JULLUNDUR.—In continuation of the last year's work *(1978-79,* p. 139), the missing and fallen piers and arches in bricks were restored.

204. HAJI JAMAL'S TOMB, NAKODAR, DISTRICT JULLUNDUR.—The surface of the plinth was replastered after removing the dead one.

205. MOMIN'S TOMB, NAKODAR, DISTRICT JULLUNDUR.—The wall surface of the plinth was replastered with lime-*surkhi* mortar after removing the decayed one.

206. MUGHAL SARAI, NOORMAHAL, DISTRICT JULLUNDUR.—The dilapidated enclosure wall near the main gate-house was repaired.

207. KOS-MINARS, VEERPIND AND NAKODAR, DISTRICT JULLUNDUR.—Missing and dislodged parts of the plinth in *lakhauri* brick work were restored after grouting the cracks with liquid cement mortar.

SOUTHERN CIRCLE

Kerala

208. PALGHAT FORT, PALGHAT, DISTRICT PALGHAT.—In continuation of the last year's work *(1978-79,* p. 140), the fallen and loose portions of the fort-wall, in brick, were underpinned and replastered, apart from rebuilding the rear side of the fort in laterite stone masonry.

Pondicherry

209. SRI MULANATHASVAMI TEMPLE, BAHOUR, PONDICHERRY.—The broken stone-beam in the *mandapa* was replaced and the terrace made watertight. The door and iron grills were repainted with enamel colour.

210. SRI TIRUKUNDANGUDI MAHADEVA TEMPLE, MADAGADIPATTU, PONDICHERRY.—A granite stone apron around the temple was laid over a brick-jelly concrete to prevent seepage of water into the foundation.

211. SRI TOTADRINATHA TEMPLE, TIRUBHUVANAI, PONDICHERRY.—The wooden doors and iron grills were repainted.

212. SRI PANCHANADISVARA TEMPLE, TIRUVANDARKOIL, PONDICHERRY,—The uneven and sunken stone slab flooring to the south, west and north was dismantled and relaid over brick-jelly concrete in lime-mortar. The angle-iron fencing and gate were repainted with enamel colour.

Tamil Nadu

213. IRAVATANESVARA TEMPLE, KANCHIPURAM, DISTRICT CHINGLEPUT.—The thick lirm--coat over the sculptures around the main shrine was removed while the damaged parts were mended,

214. KAILASANATHA TEMPLE, KANCHIPURAM, DISTRICT CHINGLEPUT.—Sunken and bulged-out eastern wall of Mahendravarmesvara shrine was completely dismantled and rebuilt after providing proper foundation. The damaged stone-paved flooring was removed and relaid.

215. SHORE TEMPLE, MAHABALIPURAM, DISTRICT CHINGLEPUT.—The construction of groyne wall by the Central Public Works Department in order to protect the temple from erosion and saline action is in progress. The restoration of the *balipitha,* with architectural stones, after removing the modern brick work is also in progress.

216. ROCK-CUT SIVA TEMPLE, SALUVANKUPPAM, DISTRICT CHINGLEPUT.—A barbed-wire fencing with reinforced cement concrete posts was provided around the protected area on the eastern and northern sides.

217. TIGER-HEADED ROCK-CUT CAVE, SALUVANKUPPAM, DISTRICT CHINGLEPUT.—The protected area to the south, east and west of the cave was provided with barbed-wire fencing with reinforced cement concrete posts.

218. SRI CHENNARAYAPERUMAL TEMPLE, ADIYAMANKOTTAI, DISTRICT DHARMAPURI.—The wide open joints of the stone masonry around the temple was filled up and pointed keeping the joints recessed. Besides attending the floor inside the *ardha-mandapa,* a flag-stone apron was provided around the Garuda shrine (pl. L).

219. CLIVE BUILDING, MADRAS, DISTRICT MADRAS.—The damaged wooden gate on the western side was replaced with a new one as per the original.

220. ST. MARY'S CHURCH, FORT ST. GEORGE, MADRAS, DISTRICT MADRAS.—On the eve of the tricentenary of the monuments the interior walls were distempered after carrying out repairs to the damaged pillars and plaster-work. The vaulted ceiling was painted with black colour as per the original. The decorative wood-work was painted with water-proof paints.

221. SVAYAMBHUNATHASVAMI TEMPLE, KILPUTTUR, DISTRICT NORTH ARCOT.—The damaged wooden doors of the *mandapa* and *garbha-griha* were replaced. A stone apron wall was .provided around the temple to check seepage of water into the foundation,

222. ROCK-CUT CAVE, KURANGANILMUTTAM, DISTRICT NORTH ARCOT.—The accretionary stone wall in the front was removed and the area was widened by removing earth in order to have a full view of the monument. The sides of the slope were provided with stone pitching alongside the regular flight of steps. An open drain was cut into the rocks by providing proper

gradients for easy flow of the rain water after removing the existing one. A barbed-wire fencing was provided to the east and south of the cave.

223. ROOK-GUT TEMPLE, MAHENDRAVADI, DISTRICT NORTH ARGOT.—The fissures in the rock surface were grouted with liquid cement mortar and sealed with combination mortar after removing the accretionary walls. The broken pillar inside the *mandapa* was repaired matching with the adjoining rock surface.

224. SRI SOMNATHESVARA TEMPLE, MELPADI, DISTRICT NORTH ARGOT.—The out-of-plumb walls of the main temple to the south, west and north were dismantled and reconstructed as per the original. Besides filling up the core between the two veneers of the walls, the top of the roof was made watertight. The dislodged and fallen stones of the plinth, including pillars of the cloister to the north, were reset. Underpinning of the voids and hollows in some portion of the compound wall was undertaken (pl. LI).

225. ROCK-CUT CAVE, NARASAMANGLAM, DISTRICT NORTH ARCOT.—The accretionary walls in the front were removed. A broken and crumbling stone pillar was repaired. A turn-style gate was provided to the monument (pls. LII-LIII).

226. SRI CHANDRAMAULISVARA TEMPLE, NATTERY, DISTRICT NORTH ARGOT.—The inner and outer veneers of the leaning walls of the *maha-mandapa* and *gopura* had been removed and the core was dismantled. The work of re-erection is being initiated after strengthening the foundation. The eastern bank of the tank was provided with a stone-pitched revetment to stop erosion.

227. ROCK-CUT TEMPLE AND SCULPTURES, SIYAMANGALAM, DISTRICT NORTH ARGOT.—The accretionary brick walls in the *maha-mandapa* were removed and the uneven flooring was dismantled and reset.

228. JAINA TEMPLE, TIRUMALAI, DISTRICT NORTH ARCOT.—A new approach pathway was laid in between the first *gopura* and Chandraprabha temple after levelling the area. A- wooden gate replacing the old one was provided to the second gate.

229. KONAR TEMPLE, TIRUMALPUR, DISTRICT NORTH ARCOT.—The narrow approach to the temple was widened by pushing back the retaining walls on either side after levelling the ground.

230. SRI SUBRAHMANYASVAMI TEMPLE, VALLIMALAI, DISTRICT NORTH ARGOT.—The undulated stone flooring of the *mandapa;,* including irregular flight of steps, was dismantled and reset. The whitewash on the stone surface was removed and the original features exposed.

231. OLD MOSQUE, FORT, VELLORE, DISTRICT NORTH ARGOT.—The damaged floor inside the mosque, the leaky roof of the *chhajja* and the broken doors and windows were repaired. The interior of the mosque had been whitewashed, while the wood-work at the exterior was painted.

232. SCULPTURES, VILAPAKKAM, DISTRICT NORTH ARCOT.—The water-pool in front of the sculptures was cleared off the silt and enclosed by grill on two sides after reconstructing the damaged retaining wall.

223. FORT, ATTUR, DISTRICT SALEM.—The accretionary brick pillars in the *vasanta-mandapa* were removed. Besides carrying out petty repairs to the walls, the damaged floor was relaid.

234-, FORT AND TEMPLE ON HILL, CHINNAKAVANDANUR, DISTRICT SALEM.—Missing wooden members of the ceiling inside the *gopuram* were replaced and expanded metal fittings with wooden frames fixed to the open as well as at the entrance. Besides, wood fixtures were treated with preservative oil.

235. SRI NARSIMHASVAMI TEMPLE, NAMAKKAL, DISTRICT SALEM.—'The leaky roof of the temple kitchen *(mandappalli)* was rendered watertight. The uneven stone-paved floor and the flight of steps of Lakshminarayana temple were dismantled and. reset. The out-of-plumb *prakara* wall to the north was also dismantled and useful materials were stacked for re-use.

236. KRISHNAGIRI FORT, GINGEE, DISTRICT SOUTH ARCOT.—The fallen portion of the bastion, including the fort-wall, was reconstructed. The parapet portion of the bastion was made watertight, while the wooden doors and grills were painted.

237. RAJGIRI FORT, AINGEE, DISTRICT SOUTH ARCOT.—The leaky vaulted roof of the south of the granary was made watertight.

238. SADAT-ULLAH KHAN'S MOSQUE, GINGEE, DISTRICT SOUTH ARCOT.—The uneven and sunken stone-paved floor of the open courtyard was dismantled and reset. The dead plaster on the side walls were removed and replastered.

239. AIRAVATESVARA TEMPLE, DARASURAM, DISTRICT THANJAVUR.—The out-of-plumb stone wall of the *nandi-mandapa* was dismantled and reset, and the terrace of the same made watertight. The undulated and damaged flooring in *mukha-mandapa* and *maha-mandapa* of the Amman shrine was dismantled and reset keeping the joints recessed. A flag-stone flooring is being provided around the temple to prevent accumulation of rain water.

240. EXCAVATED SITE, PALLAVANESWARAM, KAVERIPATTINAM, DISTRICT THANJAVUR.—Top two courses of the excavated remains were removed and reset after clearing the vegetation.

241. RAJAGOPAL CANNON, THANJAVUR, DISTRICT THANJAVUR.—The gaps and voids in the stone pitching to the bastion of the east were filled up with dry rubble stone masonry after making the joints pointed with cement mortar. Grills and grill-gate were provided at the top and the entrance respectively for public safety.

242. SRI BRIHADISVARA TEMPLE, THANJAVUR, DISTRICT THANJAVUR.—Moss and lichen on the Keralantakam *gopuram* had been cleaned with water and mild chemicals. The damaged plaster-work on the upper two *talas* was repaired. Pointing, grouting and filleting were done wherever required in the lower *talas* of the *gopuram.* The work is in progress (pl. LIV).

243. SRI BRIHADISVARA TEMPLE, GANGAIKONDACHOLAPURAM, DISTRICT TIRUCHCHIRA-PPALLI.—The dislodged stone slabs of the basement to the southern cloister were removed and reset.

244. KORANGANATHASVAMI TEMPLE, SRINIVASANALLUR, DISTRICT TIRUCHCHIRAPPALLI.—The uneven stone flooring around the shrine was removed and relaid after giving proper slope to drain out the rain water.

SOUTH-EASTERN CIRCLE

Andhra Pradesh

245. PAPANARESVARA TEMPLE, LEPAKSHI, DISTRICT ANANTAPUR.—The work of water-tightening the roof of the *mandapa* is in progress,

246. CHINTALARAYASVAMI TEMPLE, TADAPATRI, DISTRICT ANANTAPUR.—Repairs to the fallen *adhishthana* of eastern *gali-gopura* are in progress.

247. FORT, CHANDRAGIRI, DISTRICT CHITTOOR.—Structural members were consolidated after extensive debris clearance.

248. CHENNAKESVARASVAMI TEMPLE, SOMPALLE, DISTRICT GHITTOOR.—The typical wooden doors were provided to the main temple and the subsidiary shrines.

249. AGASTISVARASVAMI TEMPLE, CHILAMAKURU, DISTRICT CUDDAPAH.—The work of reconstruction of the collapsed portions of the compound wall by using the same stones is in progress.

250. SAUMYANATHA TEMPLE, NANDALURU, DISTRICT CUDDAPAH.—The collapsed compound wall to the west was reconstructed with the available stones, the work matching with the original.

251. VAIDHYANATHASVAMI TEMPLE, PUSHPAGIRI, DISTRICT CUDDAPAH.—The fallen-compound wall was repaired with available material at the site.

252. BUDDHIST REMAINS, ADDURU, DISTRICT EAST GODAVARI.—A G. I. tabular gate was provided to the fenced area.

253. FORT, GOLCONDA, DISTRICT HYDERABAD.—A flag-stone flooring was provided in Nageenabagh area.

254. CHARMINAR, HYDERABAD, DISTRICT HYDERABAD.—In continuation of the last year's work *[1978-79,* p. 143), the damaged stucco decorations on the *minars* were remodelled as per the original.

255. SANGAMESVARASVAMI TEMPLE, KUDAVELLI, DISTRICT MAHABUBNAGAR.—In continua tion of the last year's work *[1978-79,* p. 143), the original sculptural decorations were exposed by removing thick plaster coating over the *sikhara* and *mukha-mandapa.* After exposition the detailed architectural drawings to scale were prepared to transplant the temple built *in* dry stone masonry. The work is in progress.

256. FORT, WARANGAL, DISTRICT WARANGAL.—A plinth was exposed after the debris clearance from inside Svayambhu temple-complex.

257. MOUNDS CONTAINING BUDDHIST REMAINS, ARUGOLAM, DISTRICT WEST GODAVARI.—The barbed-wire fencing around the protected area was completed and an entrance gate provided.

Karnataka

258. MAHADEVA TEMPLE, ITTIGI, DISTRICT RAICHUR.—A flag-stone flooring was laid around the temple.

SOUTH-WESTERN CIRCLE

Maharashtra

259. DAHI HANDA GATE, AKOLA, DISTRICT AKOLA.—The dead and decayed mortar on the top of the gate was removed and replaced with fresh mortar.

260. PANCH-BURZ, AKOLA, DISTRICT AKOLA.—The damaged fort wall, including the bastion, was repaired.

261. ROOK-CUT CAVES, AJANTA, DISTRICT AURANGABAD.—Rock-cut drains were provided here in order to facilitate easy flow of the rain water and to prevent flow over the facade in Caves 6 to 15. Besides, the work of electrification in Caves 1-2 and 16-17 is in progress.

262. BIBI-KA-MAQBARA, AURANGABAD, DISTRICT AURANGABAD.—Weathered and missing floral designs in plaster to the west of the main tomb were restored as per the original. Besides repairing the out-of-plumb screen wall, the uneven and sunken stone-paved flooring near the main gate was reset.

263. ROCK-CUT CAVES, ELLORA, DISTRICT AURANGABAD.—Weathered sculptures on the *sikhara* of Kailasa temple (Cave 16) were restored and chemically treated.

264. MALLIKARJUNA TEMPLE, GOTHAN, DISTRICT AURANGABAD.—The collapsed compound wall to the north was reconstructed. The stone-paved flooring around the temple was widened to keep the area clean.

265. ELEPHANTA CAVES, GHARAPURI, DISTRICT KOLABA.—In Order to reclaim more land the construction of a terrace-wall from Caves 2 to 4 remained in progress.

266. JIJAMATA PALACE, PACHAD, DISTRICT KOLABA.—The fallen portion of the fortification wall was reconstructed after exposing the plinth by removing debris (pl. LV),

267. FORT, RAIGAD, DISTRICT KOLABA.—-The existing pathway connecting the Nagar-khana, Jagdisvara temple and *samadhi* of Shivaji were improved by providing a wall on the valley side. Besides renovating the false ceiling and distempering the wall of the Hathi-khana, rank vegetation was removed from all over the structure.

268. PANHALE-KAZI CAVES, PANHALE, DISTRICT RATNAGIRI.—A retaining wall was constructed in front of the caves. The removal of debris from the top of the caves remained in progress.

WESTERN CIRCLE

Goa, Daman and Diu

269. HOLY JESUS CHURCH, DAMAN.—Apart from resetting the damaged and the out-of-plumb masonry pillars, the old and peeling plasters were removed and replastered with lime-

cement mortar matching with the original. Besides, decayed wooden doors and windows were replaced as per the original. The work is in progress.

270. MOATS OF FORT WALLS, DAMAN,—Collapsed moat walls, which caused seepage of sea-water into the fort, was repaired by providing stone masonry walls in cement mortar.

271. SOUTHERN GATE AND WALLS OF FORT, DAMAN.—The decayed concrete over the gate was removed and relaid with fresh mortar. The wide open-joints and cracks in the masonry were filled up with suitable mortars and made watertight.

272. FORT, DIU.—Rank vegetation over the fort wall was removed along with the scattered debris.

Gujarat

273. STEP-WELL WITH INSCRIPTION, ADALAJ, DISTRICT AHMADABAD.—A barbed-wire fencing was provided around the acquired land, apart from making the site clean.

274. ASTODIA GATE, AHMADABAD, DISTRICT, AHMADABAD.—Materials were made available at the site to repair the cracked lintels and the roof. The work is in progress.

275. BABA LAULI'S MOSQUE, AHMADABAD, DISTRICT AHMADABAD.—The work of dismantling the floor in front and to re-lay it with fresh mortar is in progress.

- 276. DADA HARIR'S MOSQUE AND TOMB, AHMADABAD, DISTRICT AHMADABAD.—-The missing dressed-stone masonry was replaced after clearing the debris.

277. MALID ALAM'S MOSQUE, AHMADABAD, DISTRICT AHMADABAD.—The work of providing a boundary wall in brick masonry is in progress.

278. TOMB OF MIR ABU TURAB, AHMADABAD, DISTRICT AHMADABAD.—The sunken concrete apron was relaid and the barbed-wire fencing repaired.

. 279. EXCAVATED SITE, LOTHAL, DISTRICT AHMADABAD.—The damaged mud-brick walls of the warehouse were restored by simulated mud-cement bricks prepared by using pozzolona-cement. Similar repair was carried out to nearby structures. The salt-affected and loose bricks of the acropolis were removed and restored by specially-prepared bricks after repairing the sunken structures. The excavated structures at the lower town were provided with brick work matching with the surroundings to check the erosion of soil (pl. LVI).

280. MANSAR TANK AND SHRINES, VIRANGAON, DISTRICT AHMADABAD.—The dilapidated shrines after proper documentation were dismantled and reset. The damaged and missing portions of the flooring near the shrines were also repaired.

281. DARBARGARH, SIHOR, DISTRICT BHAVNAGAR.—The leaky open verandah to the west was made watertight. Repairs to the entrance Gates 1, 2 and 3 and adjoining walls were also undertaken.

282. ANCIENT MOUND, VALLABHIPUR, DISTRICT BHAVNAGAR.—A barbed-wire fencing was provided around the protected area.

283. DEVKIJI TEMPLE, DWARKA, DISTRICT JAMNAGAR.—The damaged and cracked pillars, including lintels and brackets, were removed and replaced matching with the original.

284. DVARKADHIS TEMPLE, DWARKA, DISTRICT JAMNAGAR.—New stone slabs have been obtained to replace the cracked and decayed lintels, pillars and brackets. The buldged-out and out-of-plumb masonry of the temple-complex were also repaired. While clearing the dismantled debris of a building (adjacent to the temple) the remains of an earlier temples have been discovered.

285. TRIVIKRAMJI TEMPLE, DWARKA, DISTRICT JAMNAGAR.—The decayed and cracked architectural members such as pillars, lintels, brackets, *kakshasana jalis and jangha* portions were removed and replaced with new ones. The work is in progress.

286. JUNAGADI MATA TEMPLE, VASAI, DISTRICT JAMNAGAR.—The missing and damaged portions of the temple were reconstructed. Its flooring was relaid after removing the old and decayed one.

287.SAHASRALINGA TANK, PATAN, DISTRICT MAHESANA.—The tank was made presentable after removing the silt and rank vegetation.

288. JAMI-MASJID, SIDHPUR, DISTRICT MAHESANA.—The dilapidated western wall of the mosque is being repaired. While carrying out the demolition and clearance of wooden structures from the acquired area the remains of some earlier structures have been found. The work is in progress.

289. RUDRAMAHALAYA, SIDHPUR, DISTRICT MAHESANA.—The clearance of debris after demolition of the modern buildings from the acquired area yielded number of loose sculptures, including remains of an earlier temple.

290. EAST BHADRA GATE, CHAMPANER, DISTRICT PANCH MAHALS.—The out-of-plumb stone masonry was dismantled and reset in lime mortar with recessed pointing.

291. SHAHAR-KI-MASJID, CHAMPANER, DISTRICT PANCH MAHALS.—The cracked and uneven pavement in front was removed and reset with new stones in suitable mortar.

292. ARMENIAN AND DUTCH TOMBS, SURAT, DISTRICT SURAT.—Besides clearing debris and vegetation, the repairs to the wooden gate are in progress.

293. ENGLISH TOMBS, SURAT, DISTRICT SURAT.—Apart from repairing some of the tombs, a compound wall was constructed in front.

294. EXCAVATED SITE, KARVAN, DISTRICT VADODARA.—The loose and disjointed two brick courses on top at Temples 1 and 2 were made watertight after attending to the uneven and broken brick flooring. Proper drains were provided for discharge of the rain water.

Rajasthan

295. ANNA SAGAR BARADARI, AJMER, DISTRICT AJMER.—Besides restoring the ornamental plaster work of the pillars, the approach road was relaid with fresh *morum.*

296. JAINA TEMPLE, ARTHUNA, DISTRICT BANSWARA.—The sunken and damaged pavement was relaid over a bed of concrete. The foundation of the temple was made watertight after exposing it.

297. NILKANTHA MAHADEO TEMPLE, ARTHUNA, DISTRICT BANSWARA.—The cracked and out-of-plumb masonry works, pillars, brackets and lintels were removed and fixed by new carved stones in lime-cement mortar (pl. LVII). Necessary repairs were also carried out to the *sikhara.*

298. SIVA TEMPLE 2, ARTHUNA, DISTRICT BANSWARA.—The missing, cracked and out-of-plumb stone masonry was replaced by similar type of stones in lime-cement mortar.

299. SIVA TEMPLE (NILKANTHA MAHADEO TEMPLE COMPLEX), ARTHUNA, DISTRICT BANSWARA.—Apart from relaying the pavement over a concrete bed, the foundation, of the temple was exposed at places and made watertight,

300. ANNAPURANA-MATA TEMPLE, CHITTAURGARH, DISTRICT CHITTAURGARH.—The damaged floors on the ground floor and the first storey were dismantled and relaid,

301. BADI POLE, CHITTAURGARH, DISTRICT CHITTAURGARH.—The missing ashlar stone masonry with carvings, including stone-paved flooring were restored as per the old pattern and designs.

302. BHIMLAT TANK, CHITTAURGARH, DISTRICT CHITTAURGARH.—The damaged *chhatri* was dismantled and reconstructed and repairs carried out to the out-of-plumb portions of the stone masonry.

303. CHARBHUJA TEMPLE, CHITTAURGARH, DISTRICT CHITTAUGARH—The damaged and uneven flooring including the out-of-plumb and missing stone masonry of the *kund,* had been removed and replaced by new stones on a concrete bed.

304. CHOTA MATA TEMPLE, CHITTAURGARH, DISTRICT CHITTAURGARH.—The buldged-out and out-of-plumb portions of the *sikhara* were dismantled and reconstructed matching with the original.

305. GHEE-KI-BAVDI, CHITTAURGARH, DISTRICT CHITTAURGARH.—The missing stone-paved flooring and ashlar masonry of the walls were restored with new ones.

306. KHATAN RANI MAHAL, CHITTAURGARH, DISTRICT CHITTAURGARH.—The sunken stone-paved flooring and the damaged ashlar masonry were repaired with lime-cement mortar keeping the joints recessed.

307. MAHALAKSHMI TEMPLE, CHITTAURGARH, DISTRICT CHITTAURGARH.—The damaged floor was repaired after clearing the debris.

308. NORTHERN SATI GATE, CHITTAURGARH, DISTRICT CHITTAURGARH.—The missing stone slabs of the flooring were relaid on a concrete bed keeping conformity with the original.

309. SIVA TEMPLE NEAR GAU-MUKH, CHITTAURGARH, DISTRICT CHITTAURGARH.—The sunken and missing portions of the flooring, including the ashlar masonry, had been repaired.

310. VISVANATHA TEMPLE, CHITTAURGARH, DISTRICT CHITTAURGARH.-——The uneven and broken portion of the floor was relaid with new stones,

311. MONASTERY, MENAL, DISTRICT CHITTAURGARH.—The damaged floors of the ground floor and the first storey were dismantled and relaid in cement concrete after providing proper gradients.

312. FORT, HANUMANGARH, DISTRICT GANGANAGAR.—The uneven and sunken flooring of the *chhatri* was repaired and wide open joints of the fort wall were filled. The work is in progress.

313. EXCAVATED SITE, KALIBANGAN, DISTRICT GANGANAGAR.—The work of providing barbed-wire fencing around the protected area is in progress.

314. PUNDRIKI-KI-HAVELI, JAIPUR, DISTRICT JAIPUR.—The damaged plaster on the wall was removed and replastered in lime-cement mortar matching with the original.

315. BANJARON-KI-CHHATRI, LALSOTE, DISTRICT JAIPUR.—The missing and uneven stone-paved flooring was restored. The work of providing wire-fencing around the protected area is in progress.

316. FORT, JAISALMER, DISTRICT JAISALMER.—The out-of-plumb masonry of the fort was dismantled and reconstructed. The debris from all the outlet channels, which were filled with silt, had been removed and repaired. The rough chiselled ashlar masonry at places was repaired. The work is in progress.

317. RANTHAMBHOR FORT, RANTHAMBHOR, DISTRICT SWAI MADHOPUR.—-Apart from removing rank vegetation, the pathways, including the flight of steps, were repaired.

318. FORT, KUMBHALGARH, DISTRICT UDAIPUR.—The wooden fixtures of the roof, doors and windows of the Badal-mahal were treated with preservatives. The fallen stone masonry was reset in lime-cement mortar. The work of reconstruction of the collapsed portion of the fort wall, near Rampole, is in progress. The out-of-plumb stone masonry of the Golerao temple 7 was dismantled and reset in lime-cement mortar. The uneven and sunken stone flooring was relaid on concrete bed matching with the original (pl. LVIII).

MONUMENTS MAINTAINED BY THE STATES

DELHI

1. QILA QADAM SHARIF, PAHARGANJ, NEW DELHI.—The fallen portions of the southern wall of the Qila were restored.

GUJARAT

The Department of Archaeology, Government of Gujarat carried out conservation work at the following monuments.—

2. SIVA PANCHAYATAN TEMPLE, HALAD, DISTRICT BANAS KANTHA.

3. VIKIVAVAV, DHEBAR, DISTRICT JAMNAGAR.

4. PANOTI TEMPLE AND SHANI-NI-VAV, HATHALA, DISTRICT JAMNAGAR.

5. PANCHAYATAN TEMPLE, POHCHATAR, DISTRICT JAMNAGAR.

6. BHIM DEVAL, BHIM DEVAL, DISTRICT JUNAGADH.

7. SHAKH KUND, AKHAJ, DISTRICT MAHESANA.

8. SHITALAMATA TEMPLE, LINCH, DISTRICT MAHESANA,

9. GROUP OF TEMPLES, KAKANPUR, DISTRICT PANCH MAHALS.

10. GELEANSHA VAV, PAVAGADH, DISTRICT PANCH MAHALS.

11. KALESHWAR GROUP OF TEMPLES, LAWANA, DISTRICT PANCH MAHALS.

12. GROUP OF TEMPLES, SANT, DISTRICT PANCH MAHALS (pl. LIX).

13. SANKALESWAR TEMPLE, JUNI SANKALI, DISTRICT RAJKOT.

14. SIVA SAKTI TEMPLE, ABHAPUR, DISTRICT SABAR KANTHA.

15. NAVDERI GROUP OF TEMPLES, ANTERSUBA, SABAR KANTHA.

16. SIVA PANCHAYATAN TEMPLE, ANTERSUBA, DISTRICT SABAR KANTHA.

17. SIVA PANCHAYATANA TEMPLE, BHETALI, DISTRICT SABAR KANTHA.

18. PANCHAYATAN TEMPLE, PARABADI, DISTRICT SURENDRANAGAR.

HARYANA

The State Department of Archaeology, Government of Haryana, carried out conservation work at the following monuments.—

19. BRICK STUPA, CHANETI, DISTRICT AMBALA.

20. BHIMA DEVI TEMPLE, PINJORE, DISTRICT AMBALA.

21. TOMB OF SHAIKH TAYYAB, KAITHAL, DISTRICT KURUKSHETRA,

22. CHATTA RAI BAL MAKUND DASS, NARNAUL, DISTRICT MAHINDERGARH.

23. CHORE GUMBAD, NARNAUL, DISTRICT MAHINDERGARH.

24. MIRZA ALI ZAN'S TAKHAT AND BAOLI, NARNAUL, DISTRICT MAHINDERGARH,

25. TRIPOLI GATEWAY, NARNAUL, DISTRICT MAHINDERGARH.

KARNATAKA

The Conservation wing of the Directorate of Archaeology and Museums, Government of Karnataka, carried out conservation work at the following monuments.-—

26. BOULDER INSCRIPTION NEAR KADU MALLESVARA TEMPLE, MALLESHVARAM, DISTRICT BAGALORE.

27. SRI PANCHALINGESWARA TEMPLE, SEDAM, DISTRICT GULBARGA.

28. SRI KESHAVA TEMPLE, HARANAHOLI, DISTRICT HASSAN.

29 SRI SOMESHVARA TEMPLE, HARANAHOLI, DISTRICT HASSAN.

29. LAKSHMINARASIMHASWAMY TEMPLE, HOLENARSIPUR, DISTRICT HASSAN.

30. SRI SHANTINATHA BASTI, JINANATHAPURA, DISTRICT HASSAN.

31. SRI YOGANARASIMHASWAMY TEMPLE, MUDUGREE, DISTRICT HASSAN.

MADHYA PRADESH

33. CHHATRASAL MAGBARA, MAU, DISTRICT CHHATARPUR.—The decayed floor of the antechamber was reconditioned and expanded metal *jali* provided to the openings.

34. JAMLESHWAR TEMPLE, JAMLI, DISTRICT DHAR.—The work of providing a fencing is in progress.

35. GROUP OF MONUMENTS, FORT, GWALIOR, DISTRICT GWALIOR.—Besides reconditioning the approach roads, repairs were carried out at Shahjahan-mahal, Karan-mahal and Jahangir-mahal.

36. GUJARI-MAHAL, GWALIOR, DISTRICT GWALIOR.—Proper arrangements were made for the safety of the displayed antiquities, besides repairing the roof.

37. BALLALESHWAR TEMPLE, UN, DISTRICT, KHARGONE.—The work of providing fencing was completed.

38. GROUP OF MONUMENTS, RAMNAGAR, DISTRICT MANDLA.—In continuation of the last year s work *[1978-79,* p. 147), the clearance of debris laid bare a large foundtion.

39. BUDDHIST MONUMENTS, SIRPUR, DISTRICT RAIPUR.—The work of providing fencing was completed.

40. SIVA TEMPLE, CHORPURA, DISTRICT SIRPUR.—The work of providing fencing is in progress.

41 LAKSHI TEMPLE, ORCHHA, DISTRICT TIKAMGARH.—The stone-paved flooring around the temple was made watertight and fencing work completed.

42. LOHANGI HILL, VIDISHA, DISTRICT VIDISHA.—Open joints of the masonry were grouted and recess-pointed. Fencing was provided on the top as well as at the foot of the hill.

MAHARASHTRA

The Conservation Section of the Department of Archaeology and Museums, Government of Maharashtra, carried out repairs to the following monuments.—•

43. RAGHOBADAWADA, KAPARGAON, DISTRICT AHMADNAGAR.

44. RAIGAD FORT, RAIGAD, DISTRICT KOLABA.

45. VISHRAMBAGWADA, PUNE, DISTRICT PUNE (pl. LX).

ORISSA

46. AKHANDALAMANI TEMPLE, AREDI, DISTRICT BALASORE.—The work of providing lighten ing conductor to the temple is in progress. Besides attending to some structural repairs, deep cracks were properly grouted.

47. SOPNESWAR TEMPLE, ADASPUR, DISTRICT CUTTACK.—The dilapidated temple was dismantled and is being restored after strengthening the foundation.

48. YOUDHISTHIRA TEMPLE, DHANISH, DISTRICT CUTTACK.—The *garbha-griha* and *jagmohana* of the Youdhisthira temple were dismantled and restoration work started after strengthening the foundation.

49. CHARCHIKEYEE AND KAPILESWAR MAHADEO TEMPLE, KUNDESWAR, DISTRICT CUTTACK.—The work of dismantling the dilapidated temples is in progress,

50. MADHAVA TEMPLE, MADHAVA, DISTRICT CUTTACK.—The removal of thick plaster from the wall revealed decorative designs and sculptured panels.

51. SAPTAMATRIKA AND AJAIKAPADA BHAIRAVA TEMPLE, SATHALAPUR, DISTRICT CUTTACK.—The work of dismantling the dilapidated temples remained in progress.

52. SCULPTURE SHED, SUKLESWAR, DISTRICT CUTTACK.—With a view to protect and preserve the scattered antiquities, a sculpture-shed was constructed at the site.

53. KANAKESWAR GROUP OF TEMPLES, KAULA, DISTRICT DHENKANAL.—Extensive repairs were carried out to the monuments.

54. HANUMAN TEMPLE, PARALAKHEMUNDI, DISTRICT GANJAM.—The work of restoration of the dilapidated compound wall is in progress.

55. SWARANJALESWAR TEMPLE, BHUBANESVARA, DISTRICT PURL—The dilapidated, temple was dismantled and work of restoration as per the original is in progress.

56. CHANDESWAR TEMPLE, CHANDESWAR, DISTRICT PURL—The work of repairing the temple is in progress.

57. BUDDHANATH TEMPLE, GAREDIPANCHANA, DISTRICT PURL—The work of repairing the upper portion of *the jagmohana* is in progress. .

X. ARCHAEOLOGICAL CHEMISTRY[1]

.TREATMENT OF MONUMENTS AND PAINTINGS

ANDHRA PRADESH

1. VIRABHADRASVAMI TEMPLE, LEPAKSHI, DISTRICT ANANTAPUR.—The chemical treatment and preservation of the *natya-mandapa* or *ranga-mandapa* and *ardh-mandapa* of the temple have been taken up this year, and soot and vegetational growth removed with the help of 3 per cent ammonia solution and 1 per cent teepol mixture.

2. RAMAPPA TEMPLE, PALAMPET, DISTRICT WARANGAL.—The chemical treatment and preservation of the sculptured and carved pillars, walls and ceilings of the temple continued during this year. A solution of 10 per cent ammonium hydroxide and teepol was used for the removal of vegetational growth. Chemico-mechanical methods by using 5-15 per cent acetic acid solution for the removal of white and thick lime-accretions were used. The north wall of the sanctum was preserved with 3 per cent of perspex solution in toluene. In addition to this, eight bracket figures between the east and southern enclosures have also been cleaned and preserved.

DELHI .

3. BHADON PAVILION, RED FORT, DELHI.—The central portion and the adjoining areas of the pavilion were treated during this year. Superficial accretions of greasy matter, dust and dirt were removed by using a mixture of 1 per cent of ammonia and 1 per cent teepol. Solvents like toluene, xylee etc, were used for removal of strains. The hydrogen peroxide was also used in areas where accretions did not yield to other treatments. The work is in progress.

4. DEWAN-I-AM, RED FORT, DELHI.—The treatment of marble throne was continued this year. The ceiling and the wall behind it were also taken up for treatment. The inlay works and marble surface were treated with organic solvents like xylene, toluene etc., for the removal of accretions like dust and dirt with swabs. Hydrogen peroxide was also occasionally used on plain surfaces for the removal of accretions. The entire area has been chemically treated though the preservative remains to be applied.

5. INDIAN WAR MEMORIAL MUSEUM, RED FORT, DELHI.—The stone pillars, 5 of them coated with green paint, were taken up for treatment. The green paint was removed by using butyl lactate. At some places 3 to 5 per cent solution of sodium hydroxide was also used for the removal of hardened paint layer. Besides some garments like caps, turbans etc., were treated by dry brushing and washing with petroleum ether solution for the removal of dust and dirt. The work is in progress.

6. NEELA GUMBAZ, NIZAMUDDIN, DELHI.—The treatment of floral paintings which were hidden under thick deposits of soot, grit, muddy accretions, dust and dirt were taken up on the eastern and southern sides of central ceiling. The dust and dirt were removed with the help of the feather brushes, while other accretions were removed by using organic solvents like xylene

1Information from Director (Science) of the Chemistry Branch of the Survey.

methylethyl ketone, triethanolamine, methyl alcohol etc., with cotton swabs. The treated areas remain to be preserved.

The northern and north-western gates of the Gumbaz were also chemically treated by 3 per cent solution of polyvinyl acetate in tolune.

7. RANG MAHAL, RED FORT, DELHI.—In continuation of the previous year's work the the central arch and the paintings hidden under the lime-wash were exposed by using chemico-mechanical methods. The exposed portions were treated with organic solvents, like butyl lactate, cellosolve etc. The treated areas remain to be preserved. An area of 40 sq m has been so far treated.

8. ROSHANARA BARADARI, DELHI.—The floral paintings on the arches of the Roshanara Baradari were covered by the lime-wash. The work was commenced this year on the western and southern sides and some paintings were exposed by using chemico-mechanical methods. The exposed paintings were treated with solvents like methyl, alcohol, butyl lactate, diacetone, etc. Bulged plasters noticed at some places were attended to by the Modeller, The area completed during the year is about 5 sq m.

9. SHAH BURJ, RED FORT, DELHI.—The western area of the Shah Burj was covered with accretions of dust, dirt, greasy matter, pencil marks etc. These were treated with 1 per cent solution of ammonia and 1 per cent teepol solution. Stains and other hard accretions were removed using solvents like xylene, toluene etc. The work is in progress.

GUJARAT

10. SUN TEMPLE, MODHERA, DISTRICT MAHESANA,—In continuation of the last year's work, the growth of moss and lichen covering the entire exterior of this temple and intricate carvings, were completely removed with the help of ammonia and teepol mixture. Extensive paper pulp treatment was carried out for the extraction of soluble salts. Finally, zinc silicofluoride as fungicide, and polyvinyl acetate solution as preservative were applied.

KARNATAKA

11. GROUP OF TEMPLES, PATTADAKKAL, DISTRICT BIJAPUR.—In continuation of the previous year's work on these group of temples (Kadasiddesvara, Jambulingesvara and Mallikarjuna) the thick growth of moss and lichens were completely removed by using ammonia-teepol mixture. Soluble salts were extracted wherever found necessary by the paper pulp. After proper cleaning and salt extraction, a coat of zinc silicofluoride solution was applied as fungicid, followed by a preservative coat of polyvinyl acetate solution in toluene. The work is in progress.

12. HOYSALESVARA TEMPLE, HALEBID, DISTRICT HASSAN.—In continuation of the last year's work, dust, dirt, moss and lichen etc., was removed with soft brushes using 1 to 2 per cent solution of ammonia combined with 2 per cent solution of teepol in water, and 1 per cent of sodium pentichlorophenate, as fungicide. The preservation was completed by applying a coating of 3 per cent perspex in toluene. Wax polish was also tried on a few pillars on an experimental basis. The area treated covers sculptures on the exterior wall from middle flank in between Hoysalesvara and Santhalesvara shrines.

13. CHENNAKESAVA TEMPLE, MOSALA, DISTRICT HASSAN.—In continuation of the previous year's work the remaining area of Chennakesava temple was chemically treated and preserved.

In addition, some modelling work such as fixing of loose and detached sculptures, filling up of the gaps, etc., was also attended to by using araldite and fevicol. Moss, lichen and other superficial deposits had been removed with the help of 10 per cent aquous solution of ammonia and teepol. The treated areas were given fungicidal application by using 1 per cent sodium pentachlorophenate; finally, 2 per cent solution of perspex in toluene was applied as preservative.

14. SRI GOMATESVARA STATUE, SRAVANBELAGOLA, DISTRICT HASSAN.—The work on the lofty statue was carried out with the help of a lift. It was covered with a coating of dust and dirt on the lower portion of the left ear and shoulder. The left side of the statue was badly affected due to pitting of the stone. The feet and spaces in between the fingers were highly affected by algal growth and the back side was stained with black stripes. On the whole the statue is in good state of preservation. The algal growth arid black dark stripes were cleaned with 3 per cent ammonia using cotton and coir brushes and washed with water. A thin coating of 3 per cent solution of paraffin wax in toluene was given to the back side.

On the front side, in order to reach the top of the statue, a platform was prepared and then the hoist was erected. The chemical cleaning of black stains from the nostrils and chin, lower and other parts was carried out. A coating of 3 per cent paraffin wax was given to the entire statue to make it water-proof.

MADHYA PRADESH

15. VISHNU TEMPLE, JANJGIR, DISTRICT BILASPUR.—The chemical treatment for the preservation of this temple was carried out. Old lime-wash accretion and thick dried fungus were removed with dilute ammonia solution mixed with lissapol froth emulsifier. The cleaned area was preserved with polyvinyal acetate in toluene. The cracked sculptures were repaired with epoxy resions (pl.. LXI). New combination of fungicide, like santebrite, thiomersal benzal, konium chloride was also tried on experimental basis in a limited area.

16. GROUP OF TEMPLES, KHAJURAHO, DISTRICT CHHATARPUR.—The work of eradiction of biological growth, removal of baeterial lime, smoke and other accretions like dirt and dust besides lime-wash layers, was simultaneously taken up in three temples (Chitragupta, Chaturbhuja and Dula Deo).

The work on Chaturbhuja temple was completed this year. Preservation was done with polyyinyl acetate in toluene. Fungicides like zinc-silicofloride and santobrite have been used judiciously. New combinations of fungicides like thiomersal and benzalkonium chloride have also been tried on experimental basis in limited areas. Repairing of some broken and fractured sculptures from the above temples was attempted to with the use of epoxy resins mixed with the powder of the original stone pieces. The areas have been properly matched.

17. CAVES, BAGH, DISTRICT DHAR.—In Cave 4 the paintings on the facade which were fast deteriorating due to seepage of water through the walls were given a protection by filleting and fixing of the flaking layers with movicol injection after dehydrating the layers with acetone. The work of fixing the flaking pigment and plaster layers inside Gave 4 on the eastern wall was also taken up.

A piece of painting from Cave 4 was stripped successfully and mounting work on a new-carrier was carried out by using large number of chemicals and chopped strand mat of fibre glass.

18. STUPA NO. 3, SANCHI, DISTRICT RAISEN.—The carvings and sculptures on the gateways of the stupa were chemically cleaned and the black accretions of dried moss and lichen removed.

The treated surface was preserved with polyvinyl acetate in toluene. Fractured portions of sculptures were repaired with epoxy resin.

19. NILKANTHESVARA TEMPLE, UDAIPUR (DEHRA), DISTRICT VIDISHA.—The Work of chemical cleaning and preservation of the temple was taken up. The growth of fungus was eradicated from the south side and the cleaned surface given a fungicidal treatment with mixtures of zinc silicofluoride and santobrite. The treated area was preserved with the help of polyvinyl acetate (pl. LXII).

MAHARASHTRA

20. CAVES, AJANTA, DISTRICT AURANGABAD.—During the year under review, the chemical treatment in Caves 6 and 17 was taken up and completed.

The treatment was continued in antichamber and the north wall of central hall, ground floor, in Cave 6. The thick accretions of soot, dirt, dust and age-old oxidized varnish etc., on the paintings were satisfactorily removed. Photographic documentation of all the work has been done (pl. LXIII).

Besides the chemical treatment of paintings, consolidation of loose mud-plaster, paint layer and bulges in mud-plaster was carried out. The broken edges of paint film and mud-plaster were filleted with suitable adhesives.

The chemical treatment in Cave 17 was more difficult since several coats of varnish were applied one over the other in the past. The appearance of chalkiness on paintings in this cave was one of the causes of incomplete removal of oxidized varnishes. These incrustrations were associated with the aged varnish, soot, dust, dirt etc, which were to be removed for the brightness of the original colours (pl. LXIV).

These incrustations were satisfactorily removed from the paintings on the walls of the south aisle, and on the plaster between the south and east aisles. Beautiful floral designs, animals, *kinnara* figures, dwarfs having bell in the ear, had been exposed successfully. New faces have come on the south wall of south aisle on panel 1. The panels showing the *Ruru Jataka* on the south aisle have been treated and filleted. One new inscription on pillar 4 of this cave was also brought to light. The chalkiness in west aisle, west wall and panel 5 has been removed successfully.

The reproduction of paintings done by departmental artists were also displayed in Cave 4. These were affected by insect activity which was controlled by spraying insecticides. Removal of dust, dirt, cobwebs etc. from the painted plaster as well as from the sculptures was was also continued to check further deposition and accumulation.

21. CAVES, AURANGABAD, DISTRICT AURANGABAD.—With the help of organic solvents the dust, dirt, smoke, lime-wash and other accretions from Cave 7 were removed carefully. The cleaned area was given fungicidal treatment with the help of zinc silicoflouride and finally preserved with a coat of polyvinyl acetate in tolune.

22. BIBI-KA-MAQBARA, AURANGABAD, DISTRICT AURANGABAD.—The marble *jali* around the cenotaph in the *maqbara* was cleaned with the help of chemicals like ammonia, hydrogen peroxide, alcohols and acetones and finally preserved by polyvinyl acetate.

23. RAIGARH FORT, RAIGARH, DISTRICT KOLABA.—The work of chemical treatment and preservation of stone sculptures at the *Samadhi* of Chhatrapati Shivaji was taken up during the year under review. The dust, dirt and other accretions were removed with the help of ammonia

and teepol mixture. A fungicidal treatment of zinc silicsflouridc solution was applied to the cleaned surface and finally preserved by polyvinyl acetate in toluene.

24. SHANIWARWADA, PUNE, DISTRICT PUNE.—Some selected wall paintings in. the verandah adjacent to the main entrance of the Shaniwarwada were taken up for treatment. The paintings were, covered with a thick layer of dust, dirt, old varnish and lime-wash. These accretions were carefully removed by using organic solvents and also by delicate mechanical cleaning in the case of lime-wash. Finally, 1 per cent solution of polyvinyl acetate was applied as a preservative,

ORISSA

25. JAMESVARA TEMPLE, BHUBANESWAR, DISTRICT PURI.—In continuation of the previous year's work the removal of dried moss and lichen with 2 per cent ammonia solution was accomplished and a coating of the fungicide applied on the surface. A portion of the treated surface was preserved with methyl methacrylate. The work is in progress.

26. LINGARAJA TEMPLE, BHUBANESWAR, DISTRICT PURL—Some portions of Shrine 46 of the three subsidiary shrines were taken up for the extraction of soluble salts. After the removal of salts and proper cleaning, fungicidal treatment was given to the stone surface. The work is in progress.

27. RAMESVARA TEMPLE, BHUBANESWAR, DISTRICT PURI.—In continuation of the previous year's work moss and lichen patches were removed this year. Lime coatings were washed with the help of suitable solvents. Fungicidal treatment was also given to check further vegetational growth. A coat of preservative was applied and the weak portions were consolidated.

28. SUN TEMPLE, KONARAK, DISTRICT PURI.—The walls of the *nata-mandir* complex were subjected to paper pulp treatment for the extraction of soluble salts. The work is in progress.

As suggested by the Expert Committee on Sun Temple, Konarak, the consolidation of crevices, cracks, joints and fissures etc., were treated with epoxy resin mixed with powdered stone. The work is in progress.

29. LORD JAGANNATH TEMPLE, PURI, DISTRICT PURI.—After the removal of the covered lime-plaster from the exposed portions of the vertical walls of the temple by the Conservation Branch of the Survey, a thin layer of lime had been still concealing the beauty and the colour of the panels. This was removed by the use of weak acetic acid. After die removal of the lime-coat the original colour of the stone was exposed.

The removal of thin lime-layer was carried out on the subsidiary shrines and exposed portions of the vertical wall of the *vimana* facing south and south-west. The work is in progress.

RAJASTHAN

30. JAWAHAR BURJ, BHARATPUR, DISTRICT BHARATPUR.—The paintings, depicting scenes from the *Mahabharata* and the *Ramayana* are on the ceiling of the Jawahar burj. The paintings were covered with superficial accretions like dust and dirt, and at many places fading of colour was observed. Flaking of pigments was also noticed at places in the paintings. At the four corners of the ceiling, longitudinal cracks of considerable depth were also noticed. By way of treatment, first the superficial accretions were removed using soft bristled brushes. Then the paintings were treated using solvents like methyl alcohol, isobutyl alcohol, acetone, toluene etc. Wherever

golden colours were observed, those surfaces were brushed with soft cloth and cotton swabs, The chemically-cleaned area was preserved with 3 per cent solution of polyvinyl acetate in toluene.

31. CHHATRASHALA MAHAL, BUNDI, DISTRICT BUNDL—The work of removal of dust, dirt and other oily and tarry accretion was continued on the paintings which were cleaned with the help of organic solvents and preserved properly,

TAMIL NADU

32. KAILASANATHA TEMPLE, KANCHIPURAM, DISTRICT CHINGLEPUT.—In continuation of the previous year's work the chemical treatment of the *vimana* of the temple was taken up by using aquous solution viz., ammonia hydroxide and non-polar detergents such as teepol in the ratio of 3 : 1. The extensive paper-pulb application was also done to extract the soluble salts from affected sculptures in the base portion of the *vimana* on three sides (south, west and north). The work is in progress.

33. SHORE TEMPLE, MAHABALIPURAM, DISTRICT CHINGLEPUT.—The cleaning work of the temple was carried out with teepol ammonia mixture. The work is in progress.

34. BRIHADISVARA TEMPLE, THANJAVUR, DISTRICT THANJAVUR.—The chemical treatment of the temple was taken up and is in progress.

35. BRIHADISVARA TEMPLE, GANGAIKONDACHOLAPURAM, DISTRICT TIRUCHCHIRAPPALLI.—: In continuation of the previous year's work, chemical treatment for eradication of vegetational growth and lime-wash was taken up with the help of ammonia hydroxide and teepol in the proportion of 3 : 1 and aquous solution of glacial acetic acid. Apart from this, an area of 65 sq m was taken up for paper pulp treatment to extract the soluble salts from the western and southern walls. The cleaned area was given fungicidal treatment with the help of 1 per cent solution of zinc silicofluoride and finally preserved with 3 per cent perspex in toluene. The further work is in progress.

UTTAR PRADESH

36. AKBAR'S TOMB, SIKANDARA, DISTRICT AGRA.—The paintings in Sunheri Mahal was was chemically treated with organic solvents after the removal of dust, dirt and smoke, and then preserved.

37. ARAM BAGH, AGRA, DISTRICT AGRA.—The lime-covered paintings in. the southern *baradari* have been exposed with the help of soft spatulas followed by cotton swabs wet with chemical solvents.

38. ITMAD-UD-DAULA'S TOMB, AGRA, DISTRICT AGRA.—Thick deposits of dust, dirt and other accretions on the lower border and side walls of the marble platform were removed by usual method of chemical treatment.

39. TAJ-MAHAL, AGRA, DISTRICT AGRA.—The work of cleaning of marble trellis and lower border inside the cenotaph of this Taj was carried out for removal of dust, dirt and grime.

40. SHAIKH SALIM CHISTI'S TOMB, FATEHPUR SIKRI, DISTRICT AGRA.—The dust, dirt, smoke, greasy and tarry matters on the paintings below the Arabic inscriptions of the tomb were

chemically removed. The white marble balustrade inside the tomb, covered with thick incrustation of dust, dirt and other accretions, was chemically treated with the help of soluble detergents mixed with ammoniacal solution.

41. GROUP OF TEMPLES, BAIJNATH, DISTRICT ALMORA.—Thick coats of moss, lichen, dust, dirt and other accretions on the exterior of the temples, including later carvings and sculptured areas, were chemically' cleaned and preserved.

42. GROUP OF TEMPLES, JAGESWAR, DISTRICT ALMORA.—In continuation of the previous year's work, the thick layers of moss, lichen, dust, dirt and other accretions on the exterior surfaces of these temples were removed with ammonical solution in water, and then preserved.

43. LORD CORNWALLI'S TOMB, GHAZIPUR, DISTRICT GHAZIPUR.—The interior of the tomb was covered with thick layers of moss and lichen. It has been, chemically cleaned and preserved.

44: ROUMI DARWAZA, LUCKNOW, DISTRICT LUCKNOW.—The whole structure was covered with thick layers of moss and lichen. It was chemically cleaned and preserved.

TREATMENT OF EXCAVATED OBJECTS AND MUSEUM EXHIBITS[1]

45. Twenty-nine paintings on canvas and panels belonging to the Archaeological Museum, Velha Goa, were chemically treated. The fragile paintings were repaired and new lining was provided. A coat of fresh varnish was also applied. Retouching was carried out where necessary.

46. Eight prints belonging to the Fort Museum, Madras, were chemically treated.

47. The paintings of the Queen Alexandra and Mary and Major Stringer Lawrence with Nawwab Walajah, of the Fort Museum, Madras, were chemically treated to remove the excess varnish by using a mixture of organic solvents viz., 2 per cent of ethoxy ethnol, morpholine, nhexane, xylene and toluene. The cracks in the pigments were filled up with bees wax and resin with the help of hot iron. The gaps in between the two canvases were also filled with the same mixture of solvents and then preserved with 10 per cent solution of mastic varnish.

Another painting of Nawwab Umdat-ul-umara, the Nawwab of Carnatic, was in a very fragile condition and had developed cracks. The external deposits like dust and dirt were carefully removed with soft brushes and the cracks filled up with beex wax and resin. The old varnish was removed by using 2 per cent ethoxy ethanol, xylene, benzene, etc., and finally preserved with 10 per cent solution of mastic varnish.

48. The painting 'Last Supper' in St. Mary's Church, Madras, was found in a fragile and damaged condition and covered fully with dust and dirt. These were carefully removed with soft brushes with the help of 2 per cent ethoxy ethanol, morpholine, xylene and benzene. The lower portions of three pieces of a canvas were strengthened by fixing at the back with the help of bees' wax and resin and finally preserved with 10 per cent solution of mastic varnish.

---

[1]ChemicaI treatment carried out by: 45 to 48 and 52 to 54, Chemistry Branch Laboratory, Dehra Dun, of the Survey; 49, Zonal Laboratory, Aurangabad of the Survey; 50, Zonal Laboratory Madras; 51, Regional Laboratory, Hyderabad; and information on item 55 from Department of Archaeology and Museums, Government of Madhya Pradesh.

49. About one hundred antiquities, including iron, brass and copper objects of the Raigarh Fort, were chemically cleaned and preserved for the purpose of display in the exhibition organized on the occasion of tri-death centenary of Chhatrapati Shivaji.

Iron antiquities were treated by_ electrolytic reduction using zinc and caustic soda solution while copper and bronzes with alkaline rochelle salt solution and then preserved with a thick coat of polyvinyl acetate.

50. A few copper coins received from the Southern Circle of the Survey were chemically cleaned and the green incrustations were removed by 15 per cent alkaline rochelle salt in 3 : 2 ratio. Thereafter sulphuric acid was applied to clean the coins making free from alkaline and acidic effect. Chemically-treated coins were preserved with polyvinyl acetate in toluene and acetone mixture.

51. One hundred coins, two water-colour paintings, besides one *farman* and a large print showing Tipu Sultan's sons being taken as hostages, received respectively from the South-Eastern Circle, Hyderabad, Fort Museum, Madras and Tipu Sultan Museum, Srirangapatna, of the Survey, were chemically cleaned.

52. Twelve miniature paintings received from the Government of Madhya Pradesh were chemically cleaned and preserved.

53. Twelve miniature paintings, twelve shell-covers, one big *khukharu* and two small *khukharies,* a dagger, a sword with leather covers, one dagger with silver coated cover, two swords and two leather belts and daggers with deteriorated leather covers received from the Indian War Memorial Museum, Delhi, of the Survey, were chemically cleaned.

54. Two hundred metallic objects found from the excavated site at Mathura, three coins from the excavation at Sringaverpur, three hundred sixty-five metallic objects from Chandravalli excavation, two coins from Kudavelli and five lead coins from Satanikota and five metallic objects from Kudavelli and Satanikota were chemically cleaned.

55. Mural paintings received from Gujari Mahal Museum, Gwalior, were chemically treated.

RESEARCH AND ANALYSIS[1]

56. Three specimens of plaster from the collapsed wall of the Fatehpur Sikri were put to mechanical analysis to throw light on the quality of the plaster.

57. Some marble pieces from Moti Masjid, Agra, were taken up for chemical tests to find out the nature of the green patches which had formed in them. In addition, this microscopic examination was also conducted to identify the yellow and green substances.

58. Some bricks collected from Lothal were tested in the Laboratory to know the compression strength, porosity, permeability, plasticity and organic and inorganic fillers etc.,

1Information from the Director (Science) of the Survey, except item nos. 60 and 63, which are by Professor R. V. Joshi of the Deccan College Postgraduate and Research Institute, Pune.

with a view to study the quality of mud and. to suggest methods for convervation. Few bricks were sent to the site after chemical treatment to observe the action of the weather.

59. The Chemistry Branch of the Survey, did comprehensive air monitoring of the ambient air in regard to the air pollution of the Taj and Sikandra at Agra. Some of the instruments installed are lead candle for the determination of sulphation rate, monitoring of relative humidity and temperature, wind direction and wind velocity. At Sikandra some installation of the monitoring equipments and other sophisticated equipments have been done. The accelerated testing in regard to the various preservatives on marble has been further intensified under different concentration of sulphurdioxide.

Further work has been initiated in regard to the concentration of pollutants at different *levels* of heights at Taj by placing the blocks of marble. The acidity of the particulate matter, the particle size estimation and the climatic determinations are being taken up.

60. In continuation of the previous year's *(1978-79,* p. 157) work, under the U.G.C. Project 'Chemical Analyis of Archaeological Sites', Professor R. V. Joshi, B. C. Deotare and Shrimati A. A. Kshirsagar of the Deccan College Postgraduate and Research Institute, Pune, collected samples of archaeological deposits from Ahar, Ambaran, Burzahom, Jodhpur, Kalibangan, Lothal, Manda, Nagdandi, Naikund, Rupar, Satanikota, Semathan and Virapuram. The analysis is in progress for the elements like phosphorus, nitrogen, carbon etc., besides the usual soil characteristic as pH and electric conductivity. Some of the results of the samples from Dangwada, Kalibangan and Rupar are given in the Table below (p. 163) indicating human activities. Low phosphorus in the sterile layers at Dangwada and Rupar is the indication of the desertion of sites during their respective period and again reoccupation in the successive periods as indicated by high phosphorus.

61. The work of cleaning and preservation of the metal objects, coins and stone anti quities was also carried out during this year also. The important objects include iron, copper and stone antiquities of Rajgarh.

62. The work of fluorine analysis of archaeological bones was also taken up and is in progress.

63. Chemical and microphotographic analysis of various iron objects from Mahurzari megaliths were taken up by Dr V. D. Gogte. The analysis shows the presence *of* pure iron. In one case 99.2 per cent of iron was present. The other elements studied were phosphorous, silica and carbon. From the low values of phosporus (about 0.5 per cent) it was concluded that charcoal was used as a fuel, Further, the iron objects found from megalithic sites were preserved. From the analysis of soils adjacent to the iron objects and from the chemical analysis of the iron itself, it was concluded that besides low values of phosphorus the soils are conducive to passivation of the iron.

I, Dangwada (Madhya Pradesh)

Culture	*P* *ppm*	N 0/0	*Organic Carbon* 0/0	*Calcium Carbonate*	*PH*	*E.C.*
1	2	3	4	5	6	7
Parmara	4312	0.0902	0.509	19.20	.8.6	0.21
Gupta	3313	0.0627	0.267	11.52	8.95	0.47
Saka	2375	0.0608	0.267	11.52	9.05	0.65
Sterile soil	750	0.0451	0.304	9.6	9.3	0.55
Mauryan	1126	0.0451	0.168	10.6	9.25	0.7
Early Mauryan	2375	0.0529	0.273	10.56	8.9	1.2
NBP	3563	0.666	0.341	10.56	8.4	2.2
Malwa	2876	0.0.647	0.415	6.72	8.6	1.2
Non-Culture deposit	312	0.072	0.446	3.84	8.3	0.2

II. Rupar (Punjab)

Sunga, Kushanas & Gupta	4625	0.209	0.525	10.49	8.1	14.0
NBP top	1750	0.317	0.273	0.9	7.8	14.0
NBP bottom	3000	0.082	0.472	4.77	8.8	0.3
PGW	3000	0.098	0.0608	2.86	8.6	3.6
Sterile top	687	0.16	0.199	0.9	8.5	11.0
Sterile bottom	625	0.16	0.199	3.8	8.1	12.0
Harappan	3031	0.13	0.357	7.63	8.0	9.0

III. Kalibangan (Rajasthan)

	2	3	4	5	6	7
Harappan floor citadel	1563	0.043	0.210	5.72	9.0	1.7
Harappan floor citadel	1281	0.031	0.126	3.82	8.25	3.0
Harappan floor citadel	1521	0.072	0.168	4.77	8.4	8.0
Harappan residential	3219	0.105	0.472	4.54	8.5	14.0
Harappan residential	4062	0.101	0.315	8.59	8.2	15.0
Harappan residential	3031	0.190	0.294	10.49	8.2	28.0
Harappan residential	781	0.030	0.294	Nil	8.0	1.5

XI. ARCHAEOLOGICAL GARDENS[1]

ANDHRA PRADESH

1. ARCHAEOLOGICAL MUSEUM, AMARAVATI, DISTRICT GUNTUR,—-The garden around the Museum was maintained in the best possible condition, while the feasibility of extending the gardening operations around the Maha-stupa is being explored.

2. HILL-TOP, NAGARJUNAKONDA, DISTRICT GUNTUR.—A site opposite the Middle Income Group Rest House was cleared in the second enclosure for further development. Moreover, judicious plantation was carried out around the Museum building so as to provide as much shade as possible to the visitors.

3. NAGINA BAGH GARDEN, GOLCONDA FORT, HYDERABAD, DISTRICT HYDERABAD.-—The Central Public Works Department has been approached to augment the water supply with a view to extending the garden as soon as the roads and paths are given a uniform level and the sagging edging stones set right.

BIHAR

4. EXCAVATED REMAINS AND ARCHAEOLOGICAL MUSEUM, NALANDA, DISTRICT NALANDA.— The newly-acquired area was landscaped into a fine informal garden. With the completion of the work, the whole complex has assumed an attractive look.

5. ARCHAEOLOGICAL AREA, KUMRAHAR, DISTRICT PATNA.—Besides maintaining the garden in a presentable manner, the shrubberies were rejuvinated by planting new varieties.

6. SHER SHAH'S TOMB, SASARAM, DISTRICT SASARAM.—The outlived lawns were returfed in order to improve the look of the garden, which was kept in nice condition throughout the year.

DELHI

7. RED FORT, DELHI.—A submersible pumping set was installed to improve the water supply. Flower-beds near Swan Bhadon and rose beds near the Archaeological Museum imparted a look which enhanced the beauty of the monuments around.

8. HUMAYUN'S TOMB, NEW DELHI.—The Junglee-bagh area was returfed and various types of shrubs were planted. Near the entrance to the main mausoleum were introduced several foliage shrubs.

9. JANTAR-MANTAR, NEW DELHI.—The supply of water to the garden was improved by replacements of old and rusted pipelines.

1Information from Chief Horticulturist of the Archaeological Survey of India which maintains more than ninety gardens all over India. Important work carried out during the period under review are included here.

10. KOTLA FIRUZ SHAH, NEW DELHI.—All the lawns were maintained lush green and freed from the growth of weed. Apart from "keeping the shrubberies in well-trimmed state, the flower ing beds were kept in bloom.

11. LODI TOMBS, NEW DELHI.—The garden here was renovated and for better carpetting the lawns had to be returfed.

12. NAJAF KHAN'S TOMB, NEW DELHI.—A submersible pumping set was installed in the bore-well sunk by the Central Ground Water Board to improve the water supply.

13. PURANA QILA, NEW DELHI.-—The area around the Sher Mandal was returfed and flower-beds in this garden presented a colourful display.

14. QUTB MINAR, NEW DELHI,—A good number of varieties of budded rose were introduced near the entrance gate. Further, the submersible pumping sets of 15 H.P. and 10 H.P. were installed to replace the worn-out 45 H.P. and 35 H.P. respectively.

15. SAFDARJUNG'S TOMB, NEW DELHI.—Besides keeping the garden in tidy condition, the rear lawns were freed from weeds and returfed.

GOA, DAMAN AND DIU

16. ARCHAEOLOGICAL AREA, VELHA GOA.—An old *baoli* in the St. Cajethan Church was desilted to improve the supply of water; as a result, the condition of the garden is vastly improved providing a charming environment all round, The area was thoroughly weeded, hedge trimmed and flower-beds planted.

HIMACHAL PRADESH

17. SIVA TEMPLE, BAIJNATH, DISTRICT KANGRA.—The work of laying out a new garden around this temple is progressing satisfactorily.

JAMMU AND KASHMIR

18. MARTAND TEMPLE MARTAND, DISTRICT ANANTANAG.—By planting new varieties of shrubs and trees, the look of the garden has been improved considerably.

19. SANKAR GAURISVARA TEMPLE, PATTAN, DISTRICT BARAMULLA.—The garden is maintained in the best possible condition throughout the area.

KARNATAKA

20. ARCHAEOLOGICAL SITES AND MUSEUM, HAMPI, DISTRICT BELLARY.—The garden attached to the Museum was extended to the lower terrace and the entire garden was kept in very good condition. Here the work of boring of 15.25 cm tube-well was also completed.

The work of the clearance of jungle, preparation of ground by way of digging, removal of surface stones and loose boulders around the Vittala temple-complex at Venkatapuram is under way. The area wherever possible was levelled keeping in view the natural contour; the market, roads and pathways were roughly dressed for the purpose of clear identification. In order to

supply water to the whole complex around the Vitthala, Siva and Vishnu temples a pump house with a cabin room has been completed to house a 40 H.P. pumping set which will be energized as soon as the irrigation pipes arc laid out.

21. GOL-GUMBAD BIJAPUR, DISTRICT BIJAPUR.—Like several other gardens around monuments of national importance, the garden here is faced with the problem of shortage of water. In spite of this drawback this and several other gardens like those at Ali-II Roma, Arquilla, Gagan-mahal, Ibrahim Rouza, Jami-Masjid etc., were maintaned in satisfactory state.

22. JOD-GUMBAD, BJJAPUR, DISTRICT BIJAPUR.—The orchard of this garden was further enriched by fruit plants. Some minor changes in the layout were also brought about.

23. HOYSALESVARA TEMPLE, HALEBID, DISTRICT HASSAN.—A suitable submersible pumping set was installed for irrigating the garden area which was kept neat and tidy throughout the year.

24. DARIA DAULAT BAGH, SRIRANGAPATNA, DISTRICT MANDYA.—The humid chamber, water tank and propagation shed were constructed. While the laying out of distributory pipe lines was completed in the Nursery, informal beds were carved out for planting shade-loving plants.

25. GUMBAZ, SRIRANGAPATNA, DISTRICT MANDYA.—The lawns in front were dug up, manured and kept ready for grassing during the rainy season. In the orchard, fruit trees are coming up satisfactorily.

MADHYA PRADESH

26. ARCHAEOLOGICAL AREA, KHAJURAHO, DISTRICT CHHATARPUR.—The work of supple menting the water supply to the garden was entrusted to the Central Public Works Department. The old lawns, now worn out, are being returfed.

27. HAMAM AND FORT, BURHANPUR, DISTRICT KHANDWA.—The garden was maintained in satisfactory state. In order to augment water supply, the boring of tube-well has been entrusted to the Lift Irrigation Department.

MAHARASHTRA

28. BIBI-KA-MAQBARA, AURANGABAD, DISTRICT AURANGABAD.—The outer area was grassed while the inner area was kept in presentable condition. A big well lying outside the limits of the monument has been taken over from the Defence authorities in order to increase the water supply to the entire area under the horticultural operation.

29. FORT, SHANWARWADA, PUNE, DISTRICT PUNE.—With a view to augmenting the water supply, steps are being taken to desilt the old existing well inside the fort.

ORISSA

30. MUKTESVARA TEMPLE, BHUBANESWAR, DISTRICT PURI.—It is a small garden around the Siva temple, and it has now been enriched with such plants as are associated with Lord Siva or his worship.

31. RAJARANI TEMPLE, BHUBANESWAR, DISTRICT PURI.—The formation of this garden has been completed following the general principles on garden design in an archaeological monument or site. Here emphasis has been laid on the period flora.

32. SANTRAPUR PLANT NURSERY, BHUBANESWAR, DISTRICT PURI.—In Orissa there are plans to develop several gardens, and to maintain a proper supply of plants a nursery has been started for propagational plants. Steps have been taken to introduce appropriate mother plants.

33. SUN TEMPLE, KONARAK, DISTRICT PURI.—The garden is being maintained, properly. Special emphasis has been given on the colour-scheme and the selection of sacred plants.

34. LORD JAGANNATHA TEMPLE, PURI, DISTRICT PURI.—In spite of poor supply of water the garden attached to this temple was kept in satisfactory condition. As usual cut-flower garden is being maintained for supply of flowers for the daily worship of the Lord.

RAJASTHAN

35. ANNASAGAR BARADARI, AJMER, DISTRICT AJMER.—A centrifugal pumping set has been installed to boost the water supply, this being the first measure to improve the garden further.

36. DIG PALACE, DEEG, DISTRICT BHARATPUR,—An ornamental iron fencing was fixed near the Singh Pole, and unwanted and overgrown shrubs have all been removed. In this garden were introduced roses of Indian origin.

All along the boundary wall of the Kacha Bagh a barbed wire fencing has been completed. Replanting of selected varieties of fruit plants on various plots was also done.

37. FORT, CHITTAURGARH, DISTRICT GHITTAURGARH.—A. large-scale water supply scheme by tapping water from the river bed and eventually pumping this water up the hill-top has almost been completed by the Central Public Works Department. The small garden around the Padmini palace is being maintained nicely.

UTTAR PRADESH

38. AGRA FORT, AGRA.—The inner garden of the Fort was returfed and shrubberies around the Akbar's Mahal renovated. The work of replacing the old pipelines is in progress. So far as the area outside the Fort is concerned the dry stone-pitching on the nullah has been completed to check soil erosion due to steep flow of the water.

39. ITMAD-UD-DAULA, AGRA, DISTRICT AGRA.—The work of reorienting the garden on the Mughal style-has been completed.

40. IDGAH, AGRA, DISTRICT AGRA.—Two lawns in front, which were no longer looking attractive, had to be returfed.

41. KHAN-I-ALAM NURSERY, AGRA, DISTRICT AGRA.—This central nursery has been fulfilling the demands of plants to all the archaeological gardens here, besides serving as the gale centre of plants to the people. Apart from propagational activities for raising the stock, the conservatory has been improved and nursery enriched with innumerable kinds of plants.

42. RAMBAGH, AGRA, DISTRICT AGRA.—This old garden attached to the resort of the Mughal emperor Babur consists of orchard, formal and informal garden. Steps are now being taken to lay bare the original layout by excavating at places.

43. TAJ MAHAL, AGRA, DISTRICT AGRA,—As the bore-well water was slightly brackish it was found unsuitable for several delicate plants; hence, a fresh water connection has been provided to improve the plant wealth.

44:, AKBAR'S TOMB, SIKANDRA, DISTRICT AGRA.—The work of providing irrigational facilities in the rear sector of the Sikandra has been completed. Lawns which had outlived their life have been returfed.

45. FATEHPUR SIKRI, DISTRICT AGRA.—The C. I. pipeline from the station-road well to the overhead tank has been replaced by P. V. C. pipeline. The garden has been kept in satis factory condition.

46. ARCHAEOLOGICAL AREA, KUSINAGAR, DISTRICT DEQRIA.—Some of the plots of lawns were returfed and a number of Sal trees have been planted at the Nirvana-stupa site. The small garden at the Ramabhar stupa has been maintained well.

47. ARCHAEOLOGICAL AREA, SAHET AND MAHET (ANCIENT SRAVASTI), DISTRICT GONDA.—The garden at the Jetavana-*vihara* at Sahet has been improved to a great extent by remodelling the land forms and by planting grass on the mounds. A groove of Sal trees has been provided and the plants are coming up well. At Mahet, the works of fencing, sinking a bore-well and the installation of a pump-set have been progressing satisfactorily.

48. NANDAN MAHAL, LUCKNOW, DISTRICT LUCKNOW.—The garden here was kept in presentable condition throughout the year.

49. RESIDENCY, LUCKNOW, DISTRICT LUCKNOW.—The sunken portion popularly called 'Badte Kadam' area is being returfed.

50. ARCHAEOLOGICAL SITES AND MUSEUM, SARNATH, DISTRICT VARANASI.—A few lawns which had outlived their life were returfed. Furthermore, hedges had to be replanted while the linear beds in front of the Museum were replaced by roses. As the water supply was inadequate, Uttar Pradesh Government got a bore-well sunk for the Survey and the measure has proved successful. A grove of Sal trees which matches well with the character of the Buddhist sites has been provided at the rear of the Chaukhandi Stupa.

XII. PUBLICATIONS

PUBLICATIONS OF THE SURVEY

1. INDIAN ARCHAEOLOGY—A REVIEW.—The issues for *1974-75* and *1975-76* were brought out.

2. ARCHAEOLOGICAL WORKS CODE.—The revised English version has been published.

3. MEMOIRS OF THE ARCHAEOLOGICAL SURVEY OF INDIA, NUMBER 78.—*Lothal—A Harappan Port Town (1955-56),* volume 1, of the Series, was brought out.

4. WHEELER MEMORIAL LECTURE SERIES.—*Sir Mortimer and Indian Archaeology* by Grahme Clark was printed off.

5. ANNUAL REPORT ON INDIAN EPIGRAPHY.—The issues for the years *1969-70* and *1970-71* were brought out.

6. SOUTH INDIAN INSCRIPTIONS.—The volume XXIII of the series has been published.

7. EPIGRAPHIA INDICA.—Part VI of the volume XXXVIII was published and volume XL, part III sent to press.

Volumes III and IV of the journal were reprinted.

8. GUIDE BOOKS. —*Ajanta* (eighth edition) by Debala Mitra, *Khajuraho* (sixth edition) by Krishna Deva, *Nagarjunakonda* (third edition) by H. Sarkar and B. N. Misra and *Amaravati* (second edition) by H. Sarkar and S. P. Nainar, were brought out.

9. PICTURE POSTCARDS.—One set of black and white picture postcards on Sibsagar (Assam) and one on Belur have been printed off and twenty coloured picture postcards on the temple at Halebid and Belur were also released.

OTHER PUBLICATIONS

MADHYA PRADESH.—The Department of Archaeology and Museums, Government of Madhya Pradesh, brought out an illustrated pamphlet on the cultural Heritage of Madhya Pradesh.

MAHARASHTRA.—The Deccan College Postgraduate and Research Institute, Pune, brought out *The Pleistocene Fauna of India,* by G. L. Badam.

UTTAR PRADESH.—The State Museum, Lucknow, brought out a revised supplementary list of the *Catalogue on the Mughal Coins,* by C. R. Singhal and *Coin 'Hoards from. Uttar Pradesh,* part I, by A. K. Srivastava.



A

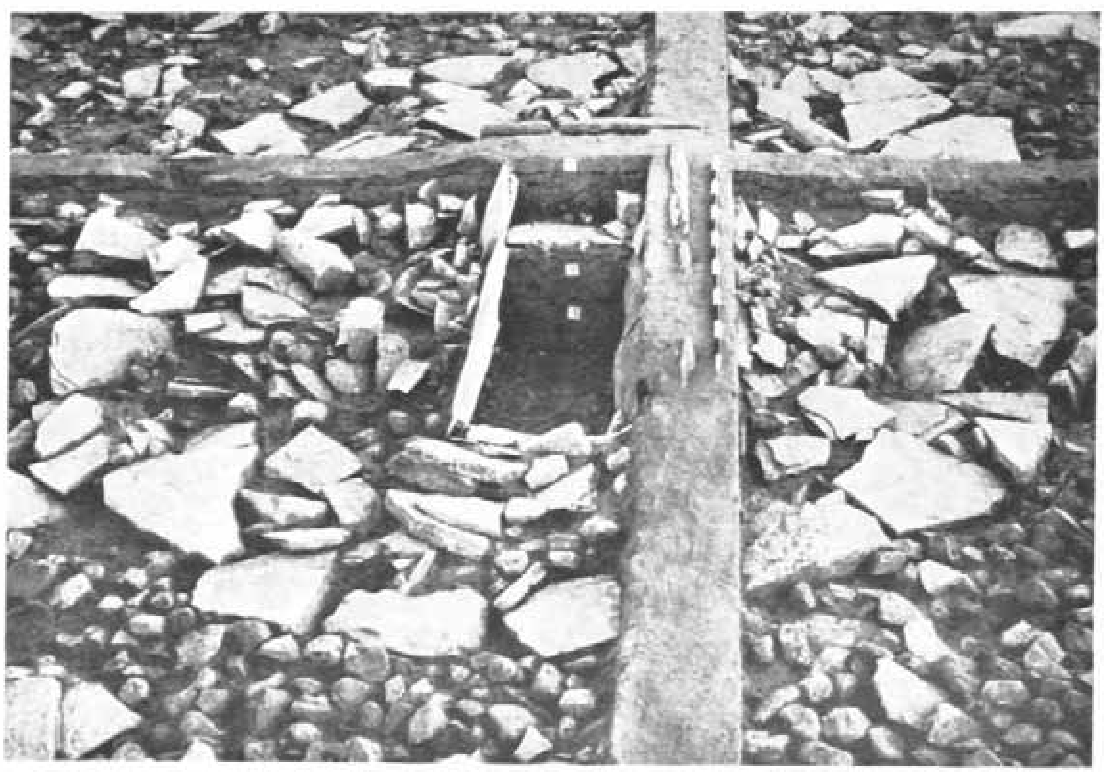


B

Satanikota: A, *Megalith I*; B, *interment in Megalith XVII*. *See pp. 3 and 4*



A



B

Satanikota: A, Megalith A II; B, Megalith B VII. See pp. 4 and 6

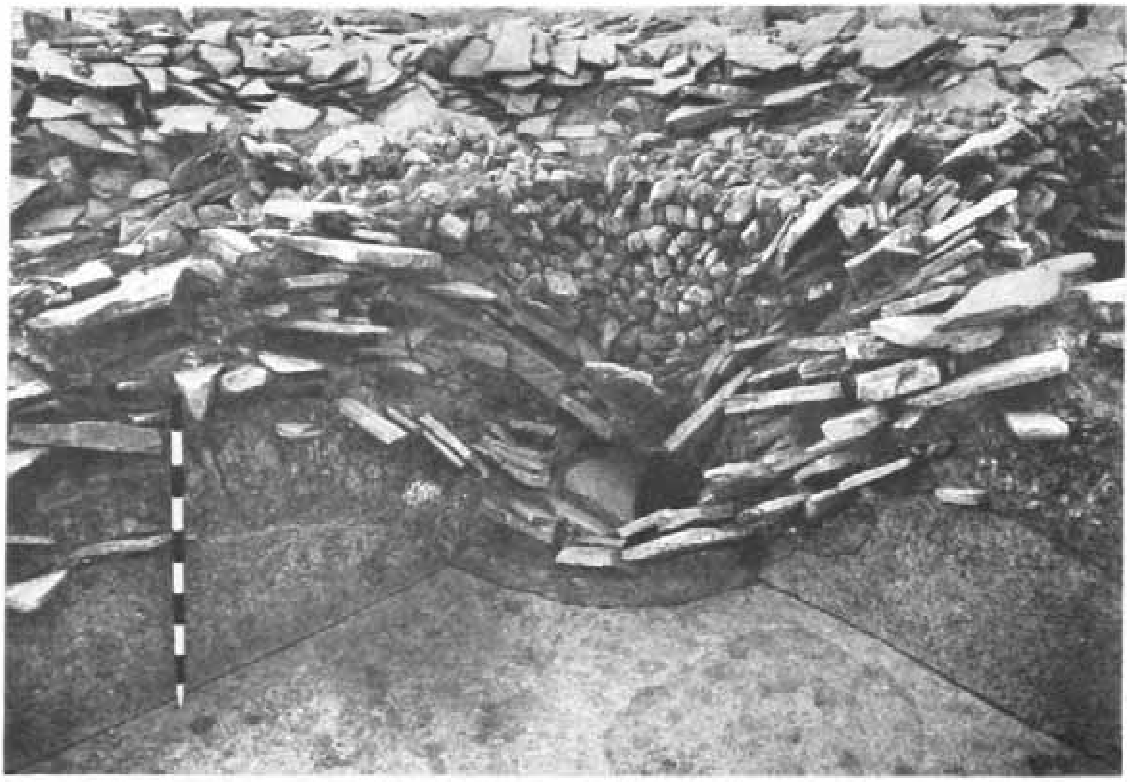


A

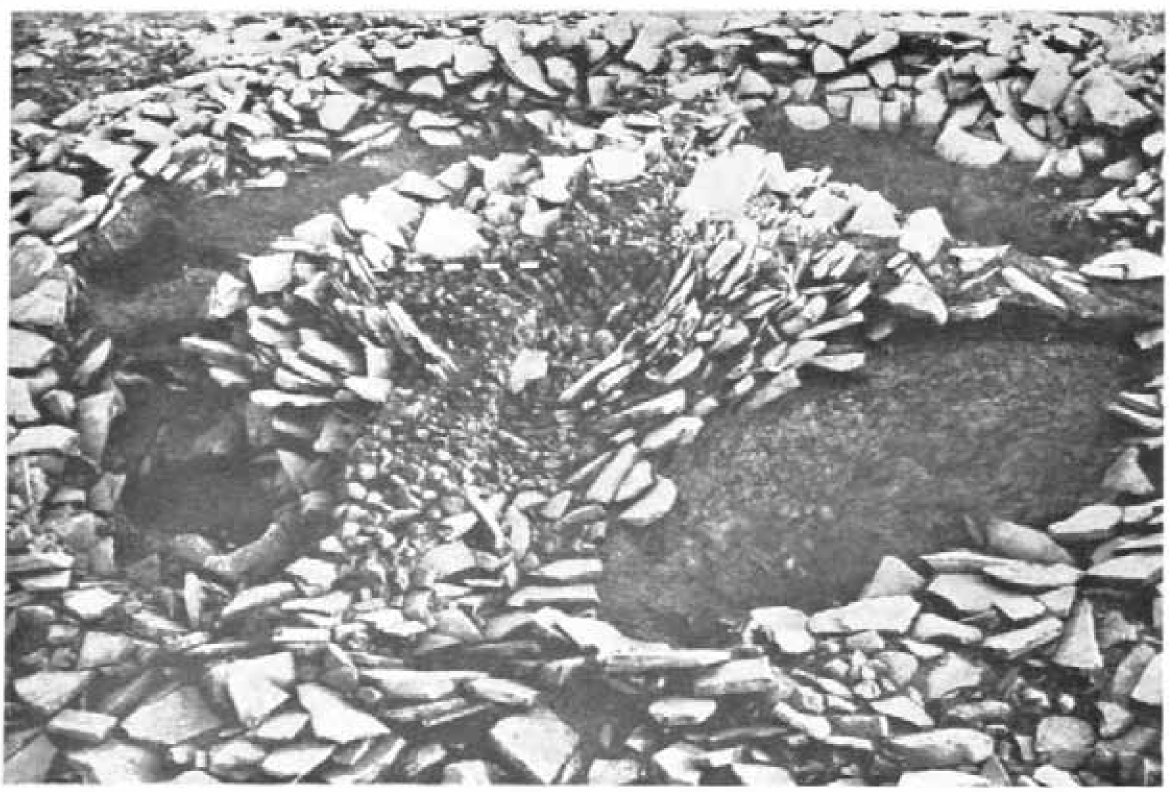


B

Satanikota: Megalith C I, A, *during excavation,* B, *view of grave goods.* *See p. 5*



A



B

Satanikota: section and plan of Megalith B 1. See p. 6

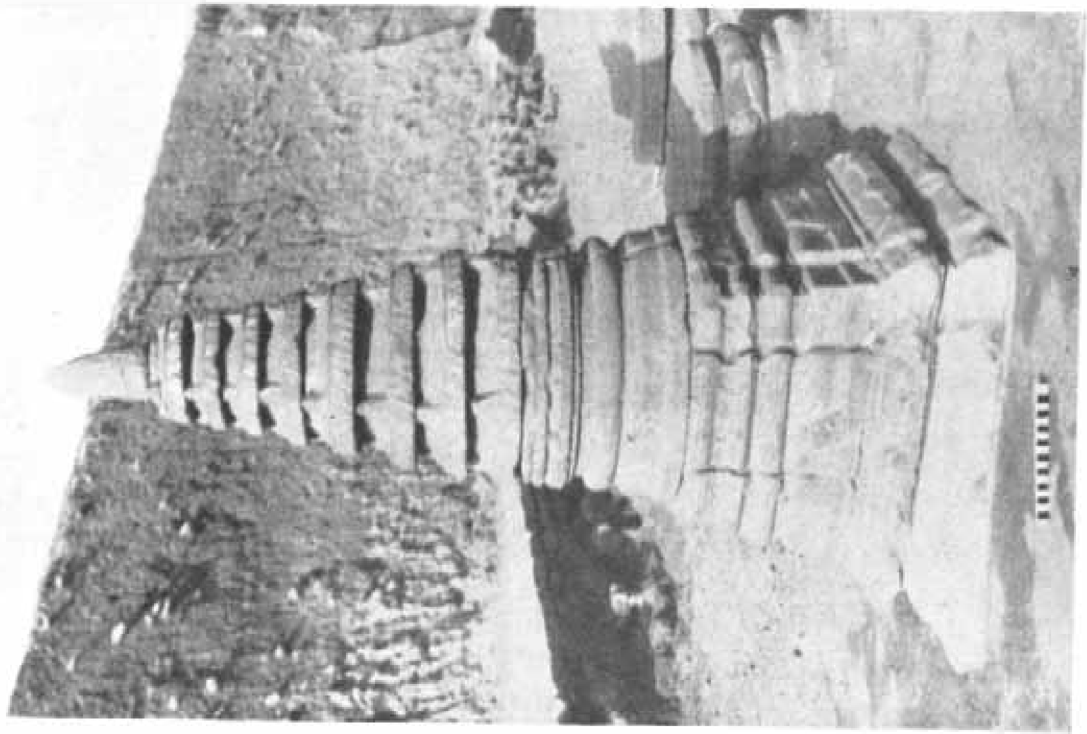


A



B

Antichak: A, view of exposed structures; ad B, bastion. See pp. 12 and 13



B



A



C

Antichak: A, *miniature figures of Buddha carved on a stupa;* B, *votive stupa after restoration;* C, *bronze images of Tara and Lokanath.* *See p. 13*



A

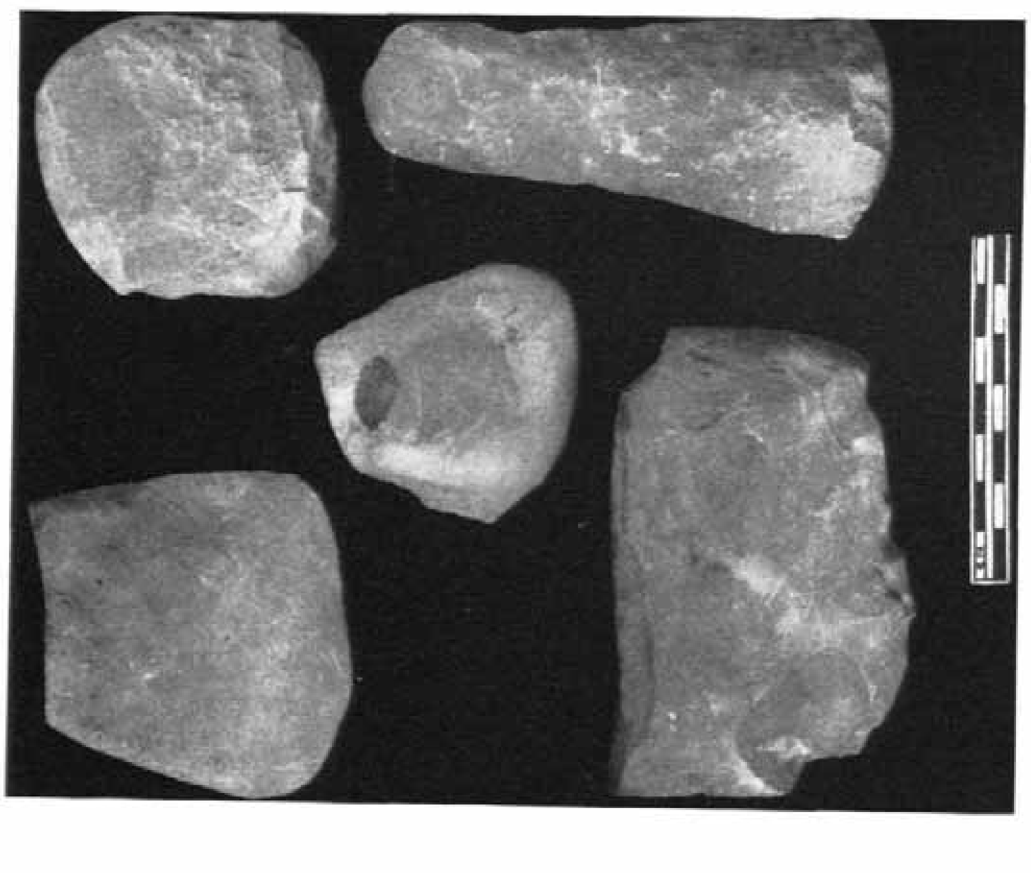


B

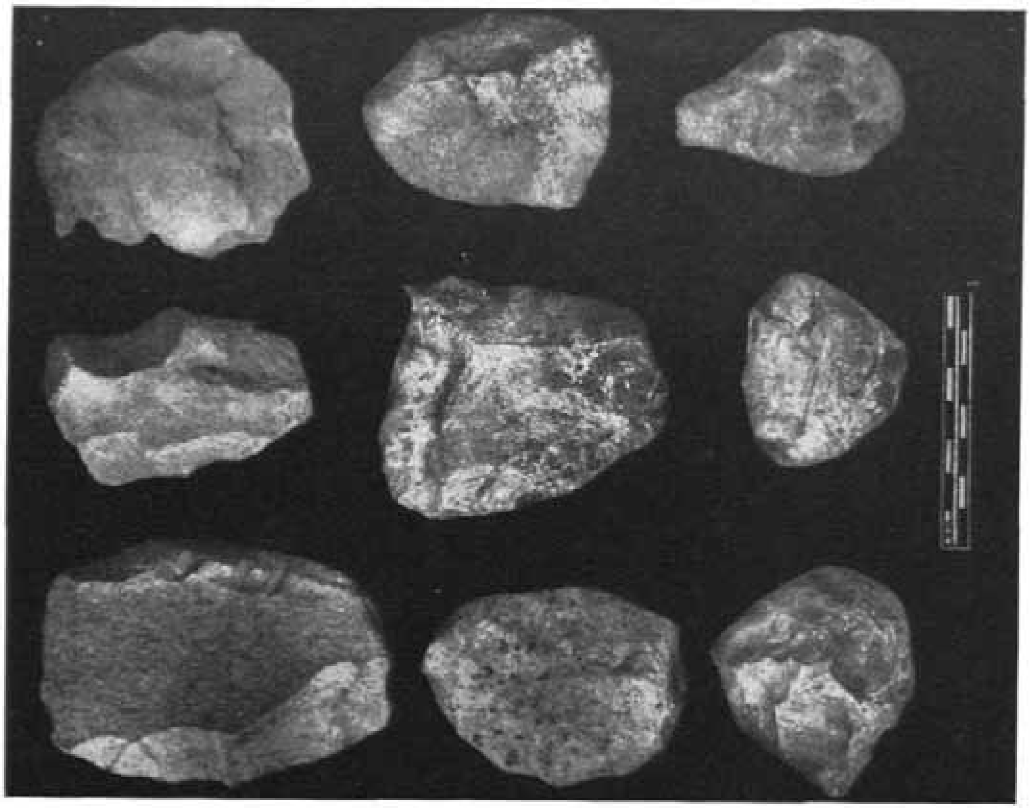


C

Antichak: A, *Navagraha panel*; B, *Karttikeya*; C, *Aparajita*. *See p. 13*

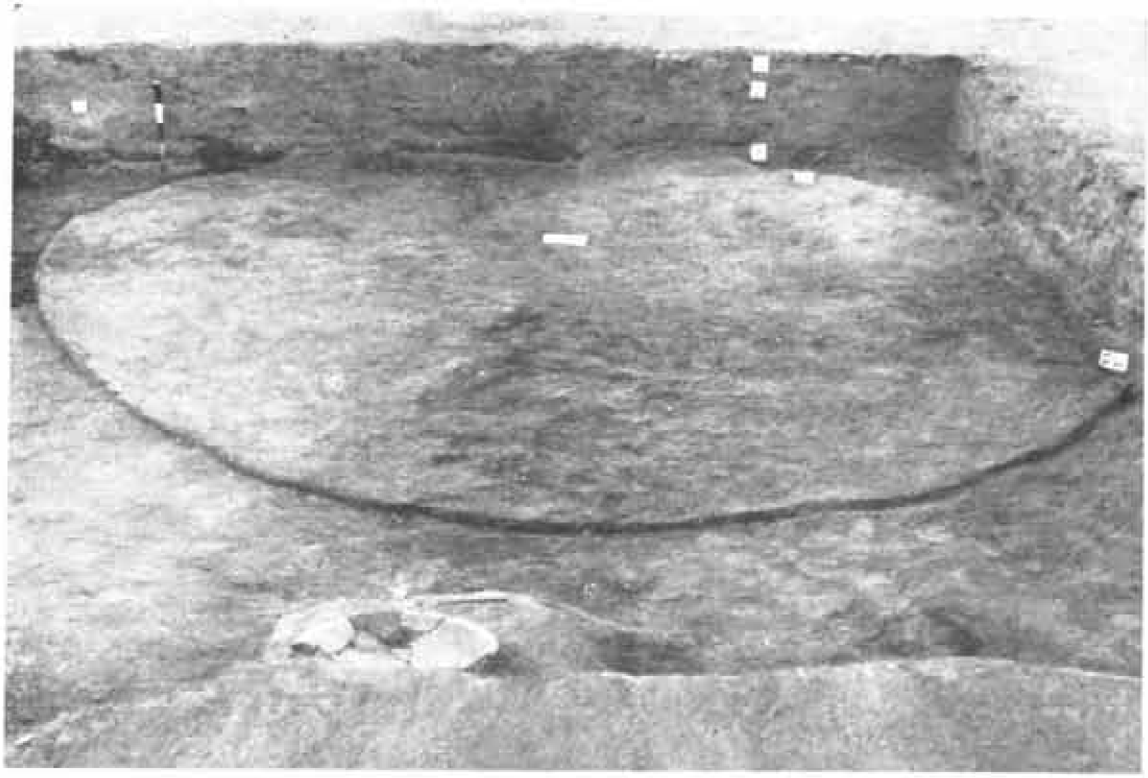


A

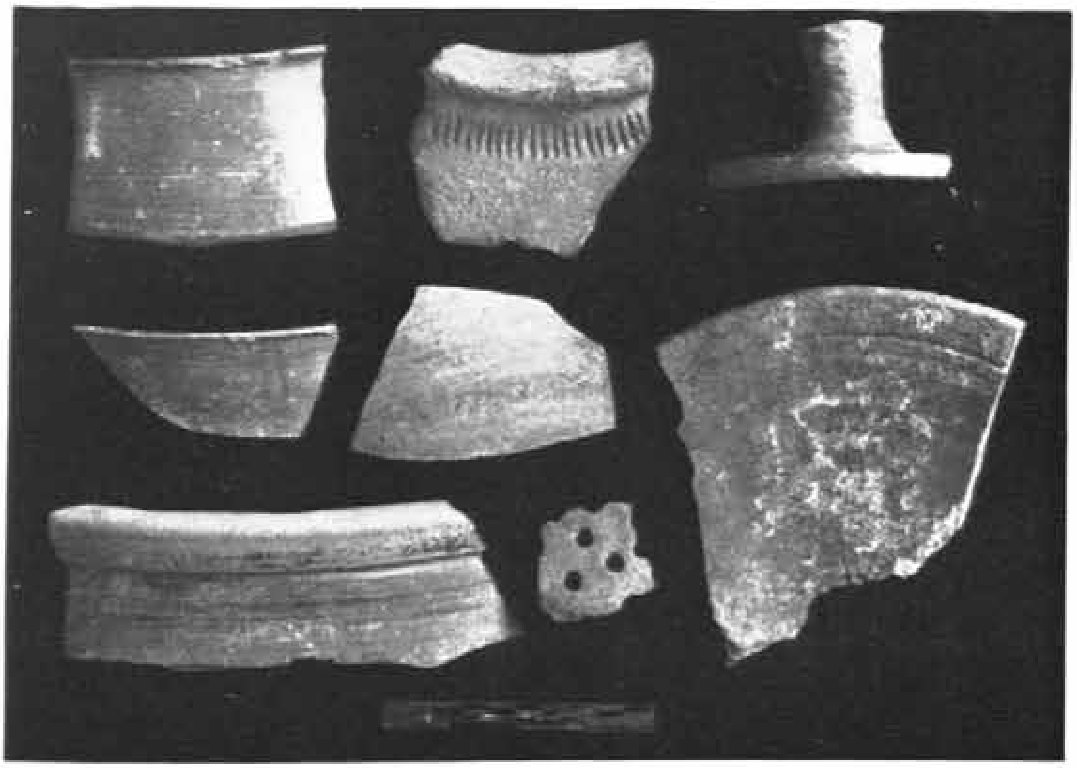


B

Arali: A, neoliths; B, Shetrunji valley: late to post Acheulian artefacts. *See pp. 16 and 19*

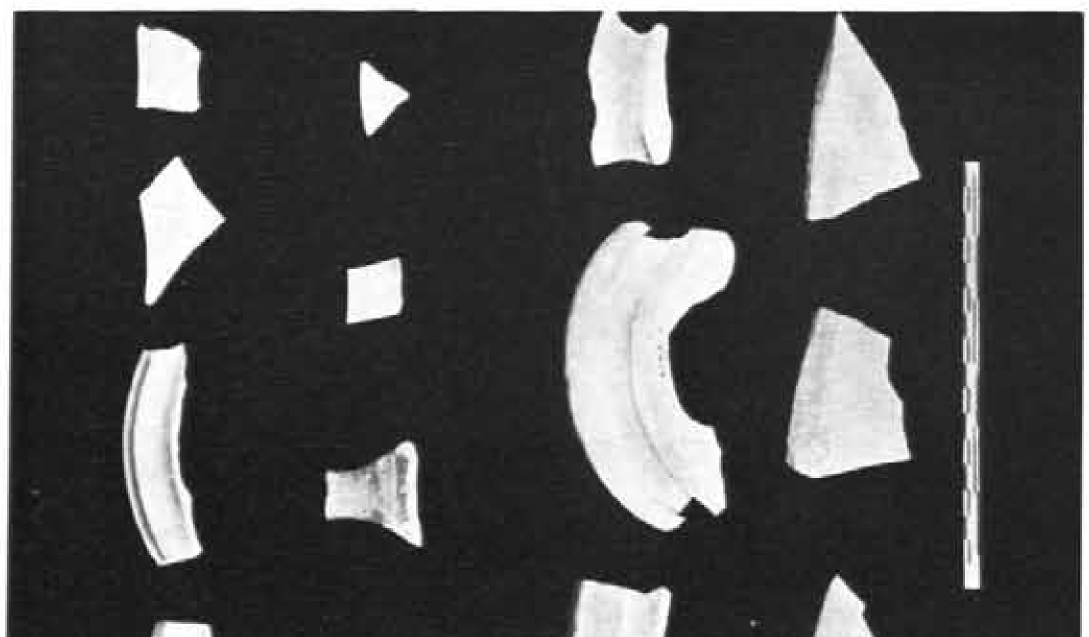


A

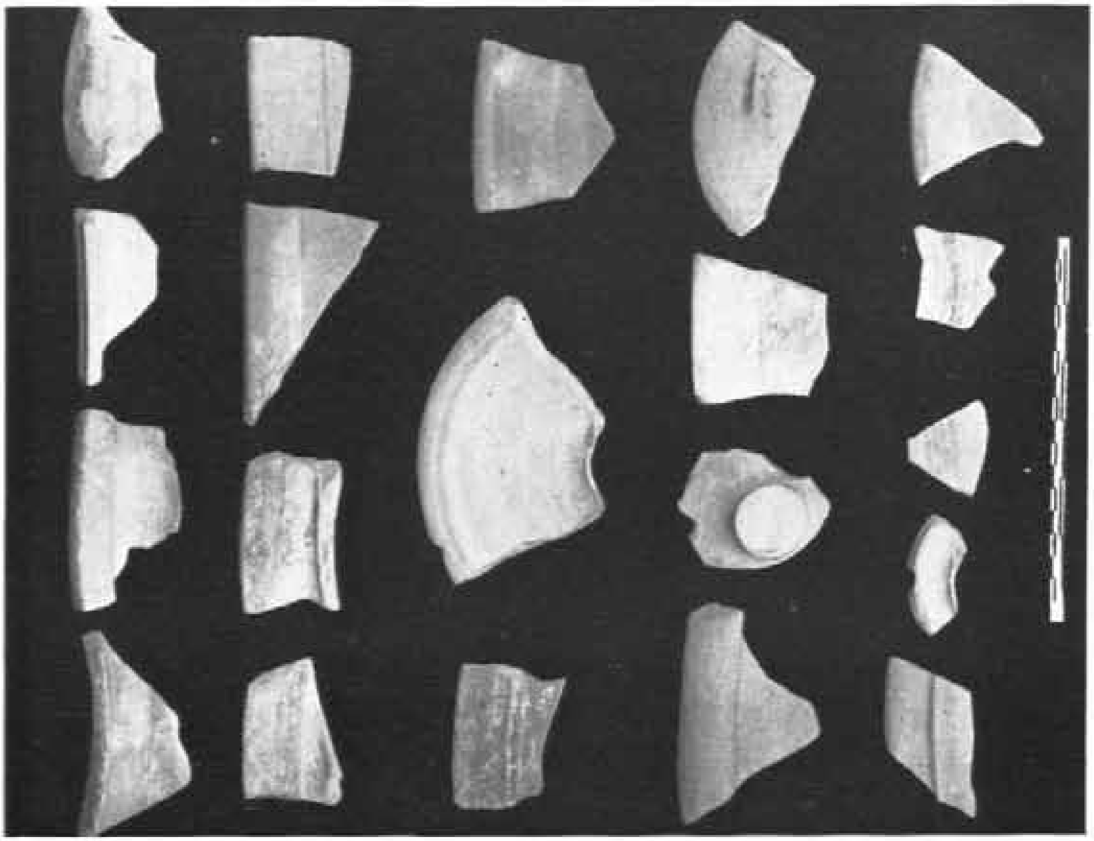


B

Nesādi: A, *excavated remains of circular hut*; B, *pottery types*. *See p. 24*

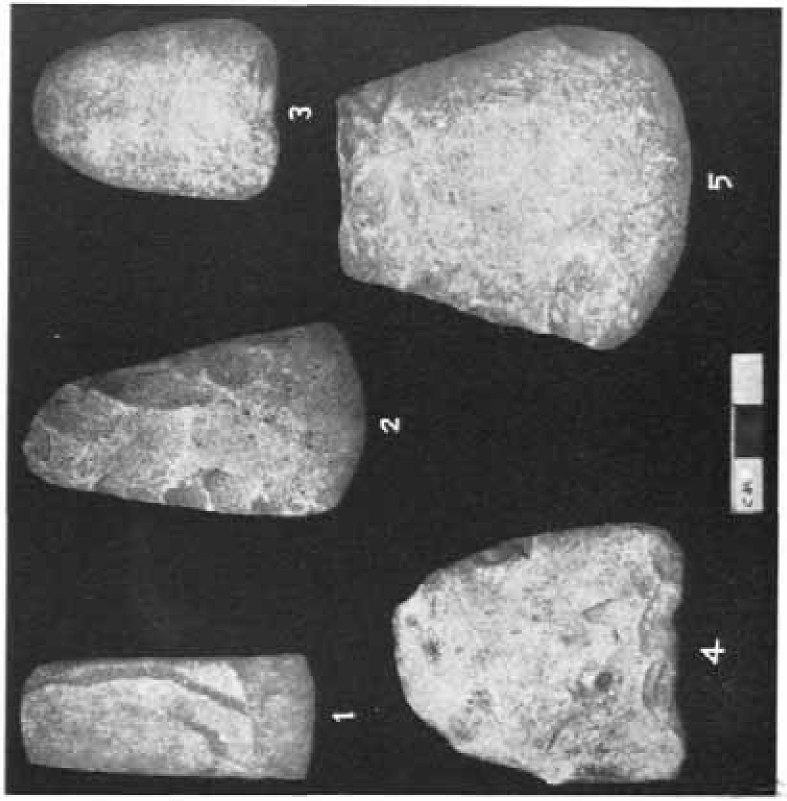


A

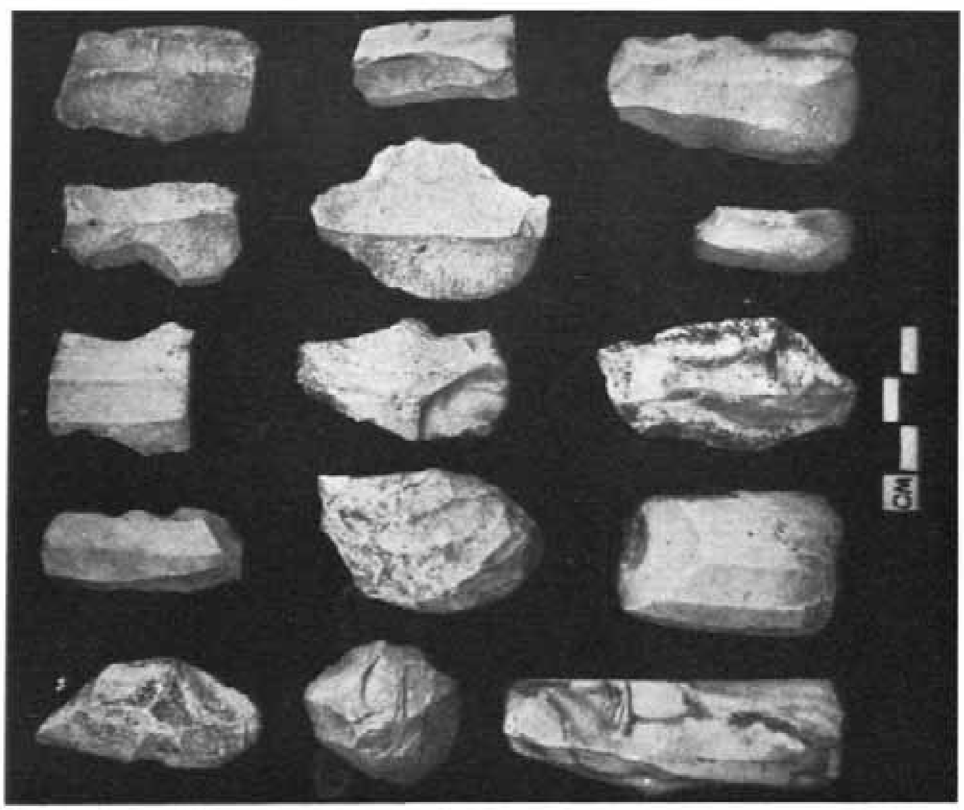


B

Dwarka: A, pottery from DWK-1; B, late Harappan pottery from Bet Dwarka. See pp. 27 and 29



B

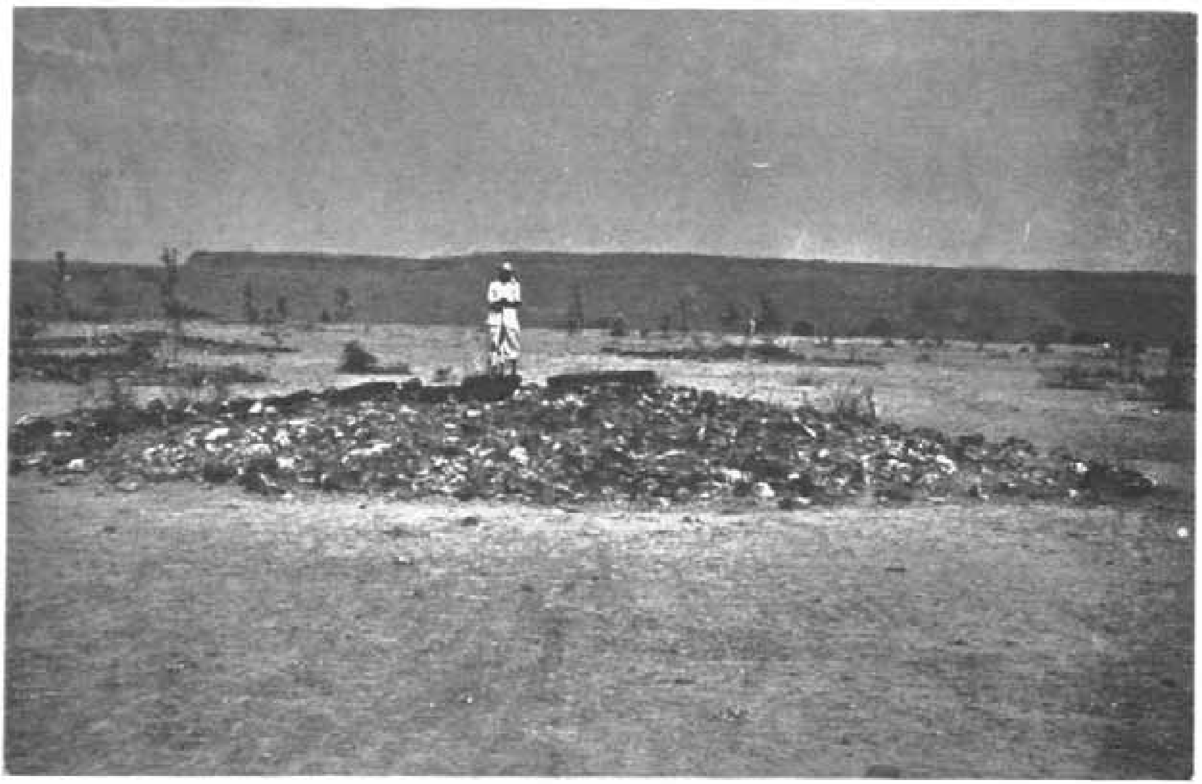


A

Kopagada: A, *Late Stone Age tools*; B, *Tutidoda, Parpa, Baitpara, Kalipur and Ambagada: neoliths*. *See p. 36*

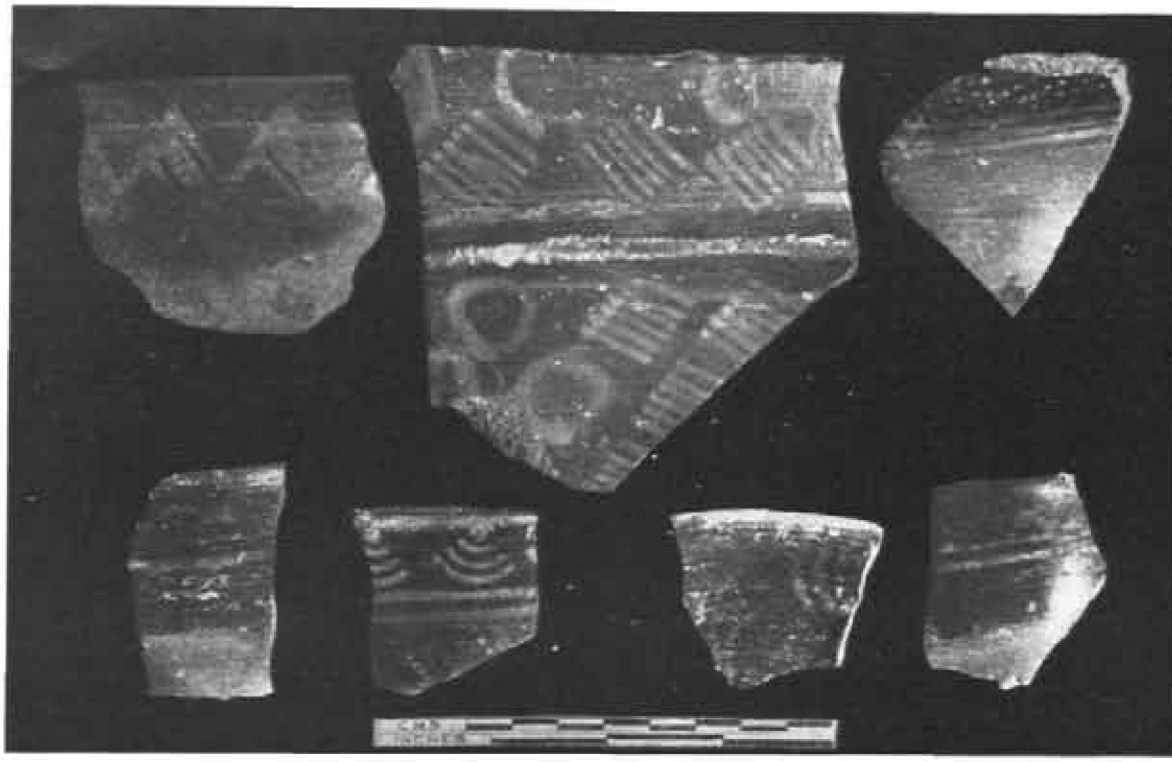


A

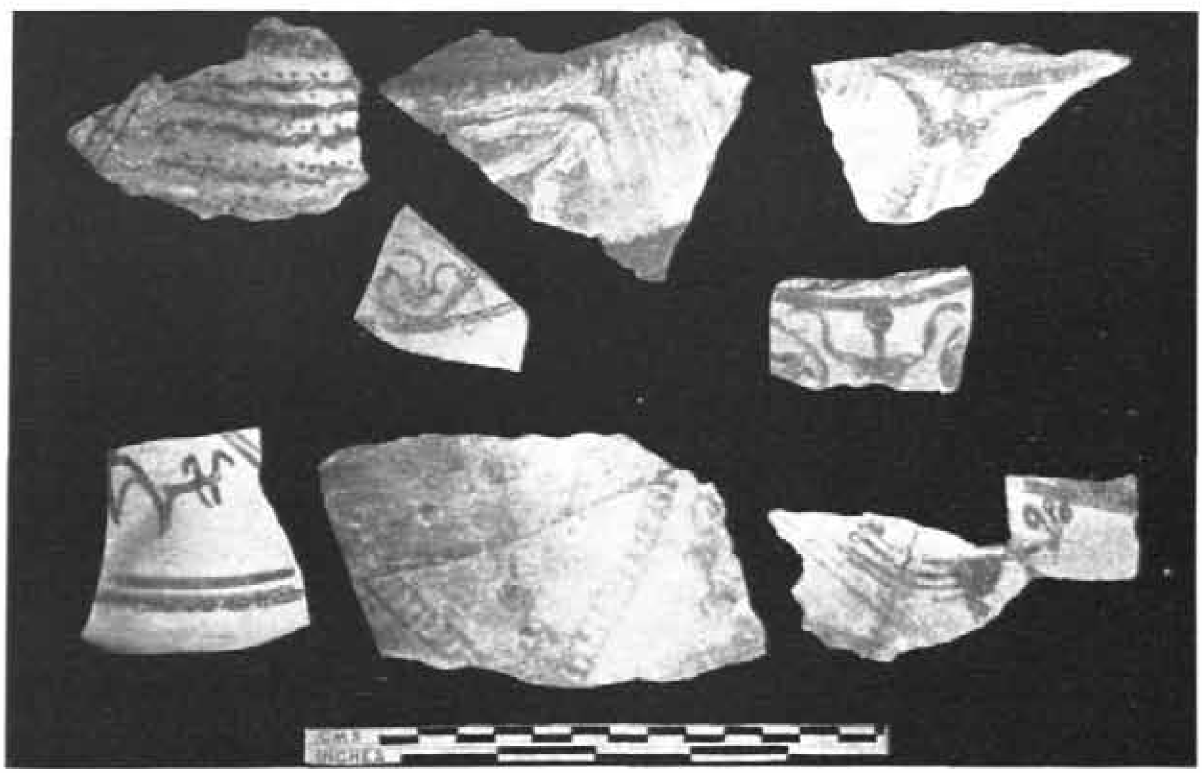


B

Baghaiya: A, *view of dolmenoid cists*; B, *Adwa valley*: *cairn circles*. *See pp. 46 and 49*

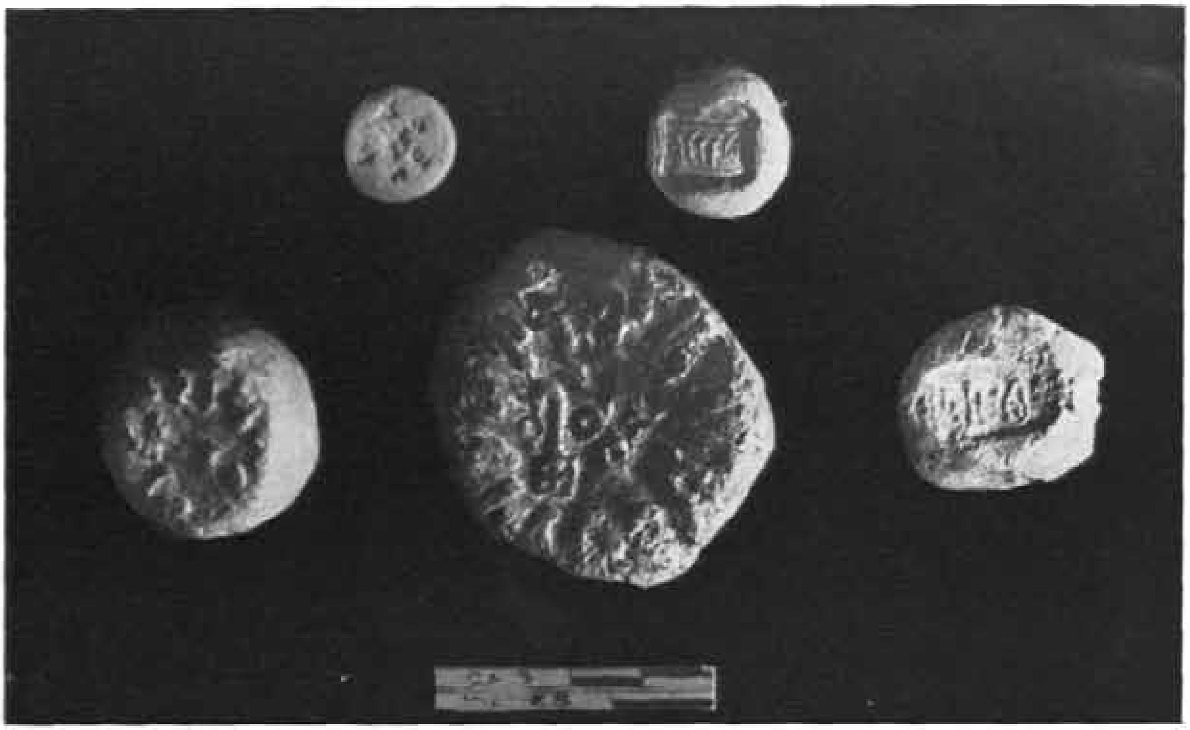


A

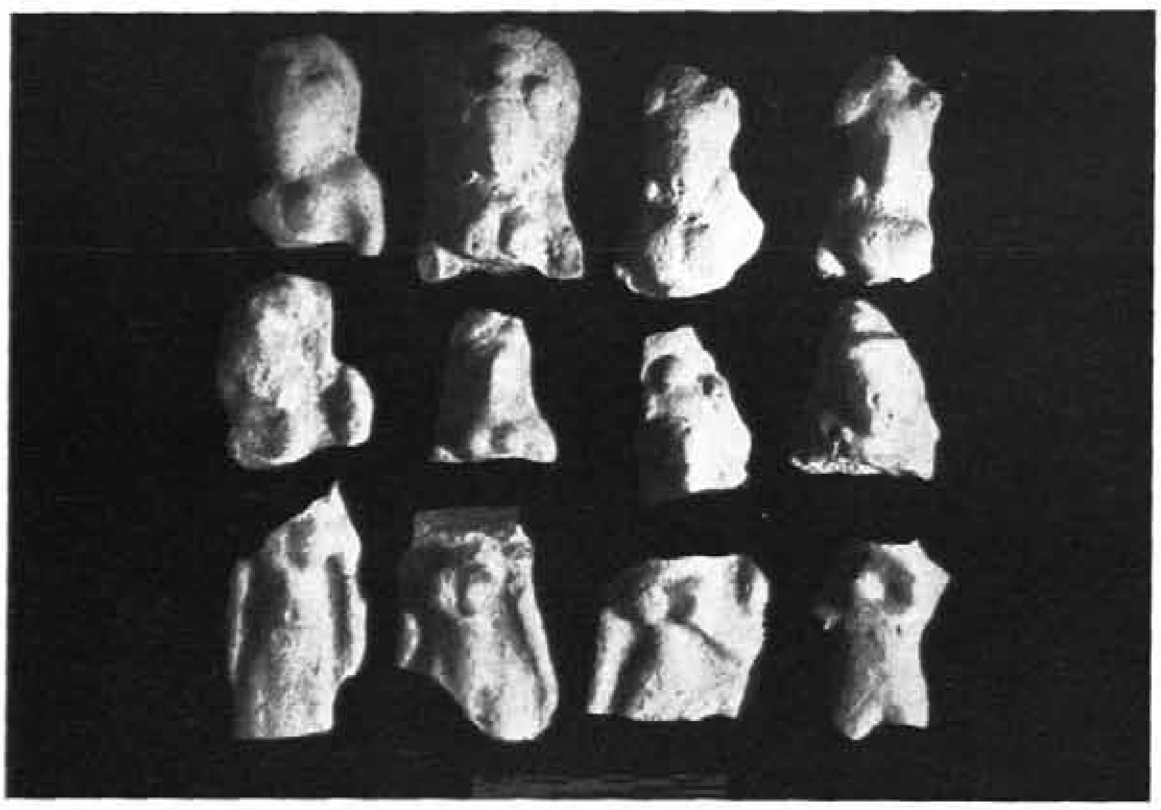


B

Dangwada: A, *painted black-on-red wares, Period I A*; B, *Malwa pottery, Period I B.* *See p. 54*



A



B

Dangwada: A, *terracotta seals, Period III*; B, *terracotta human figurines, Period IV*. *See p. 55*

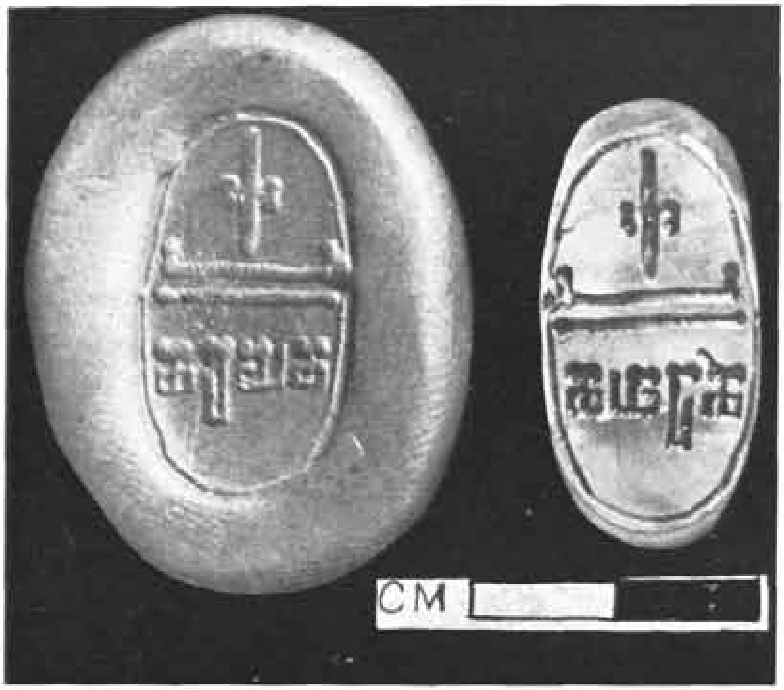


A



B

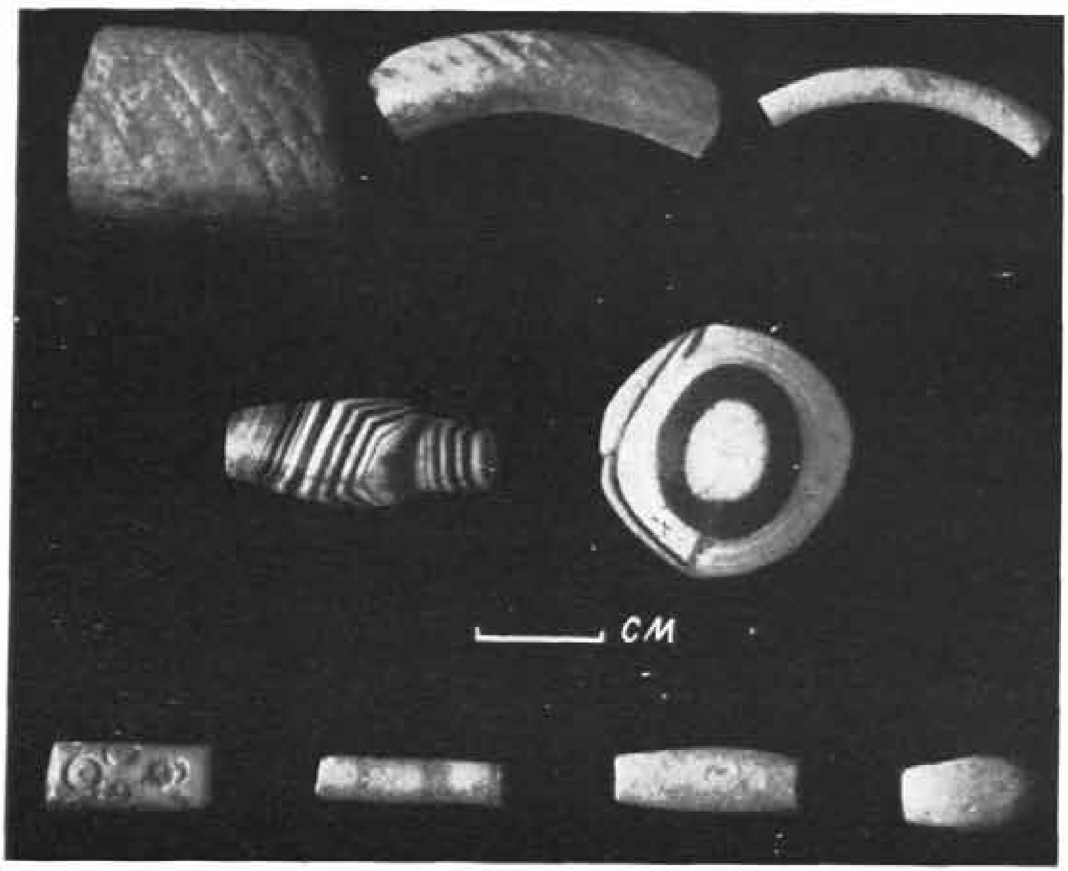
Nagra: A, *view of excavated remains*; B, *exposed pilastered niche*. *See p. 55*



A



B

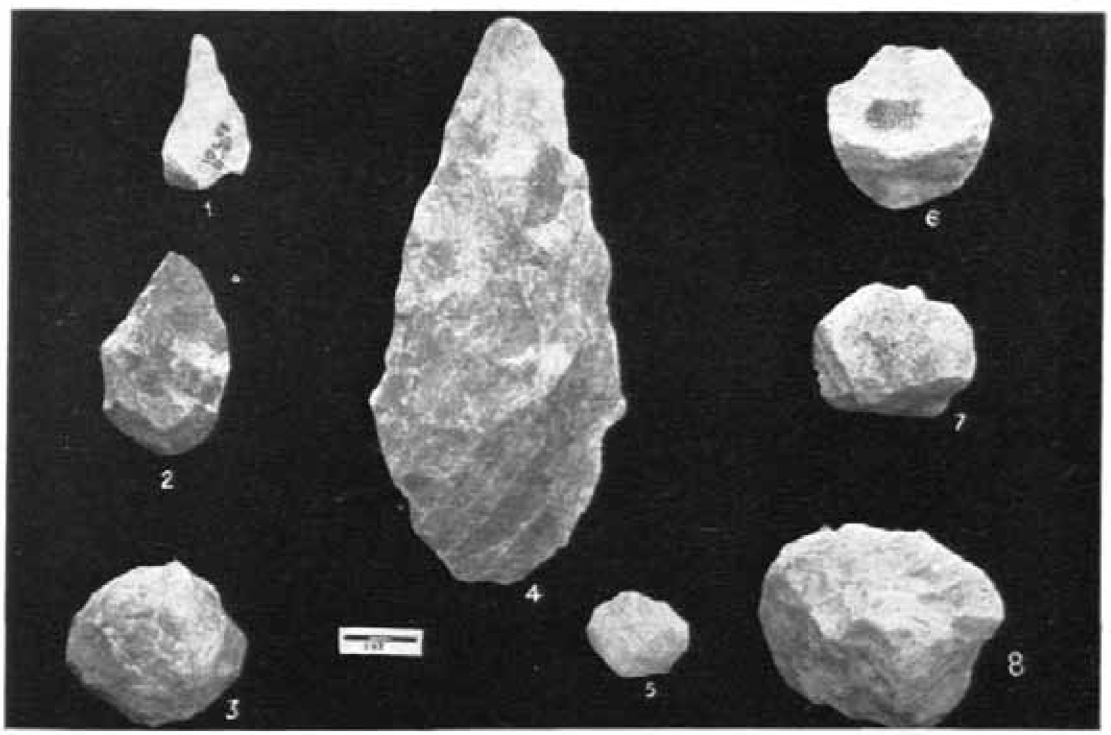


C

Nagra: A, *inscribed crystal seal*; B, *Barapani, Khasi Hills*: *stone tools*; C, *Hulas*: *minor antiquities, Period I.* *See pp. 56, 60 and 82*



A



B

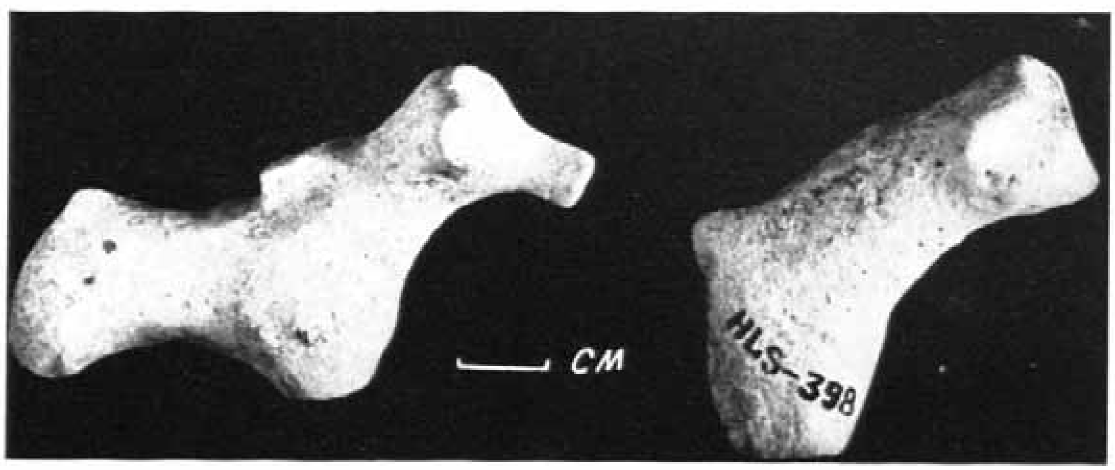
Barapani, Khasi Hills: A, *stone tools*; B, *Didwana*: *early Acheulian tools*. *See pp. 60 and 65*



A

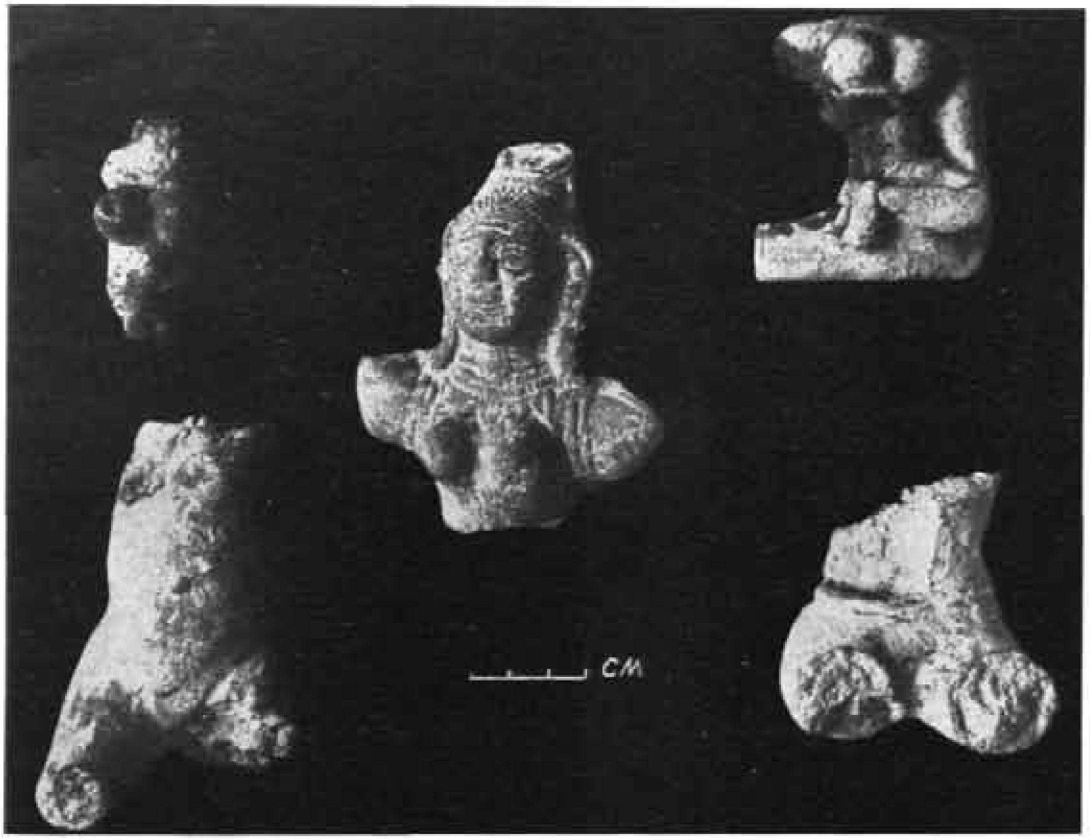


B

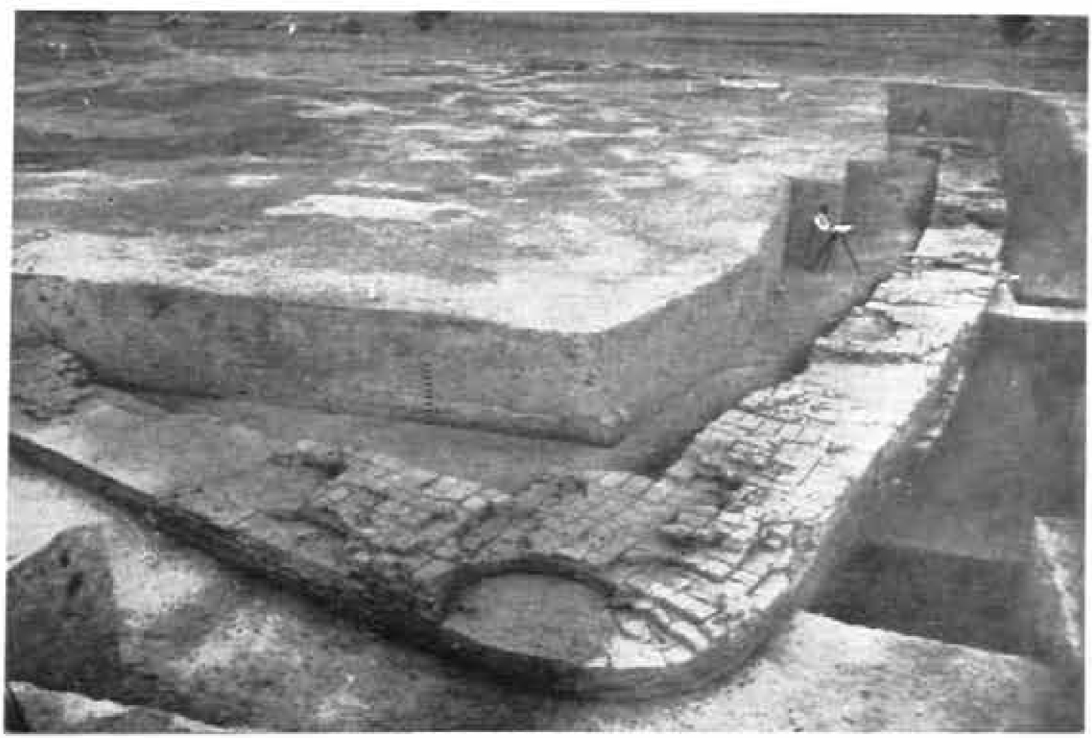


C

Poluvanpatti: A, *human figurine*; B, *Ayodhya*: *terracotta animal figurine*; C, *Hulas*: *animal figurines, Period I.*
See pp. 69, 76 and 82



A



B

A, *Appukkallu: human terracotta figurines*; B, *Hulas: burnt-brick structure, Period IV*. *See pp. 70 and 82*



A



B

Sringaverpur: excavated tank. *See p. 74*



A

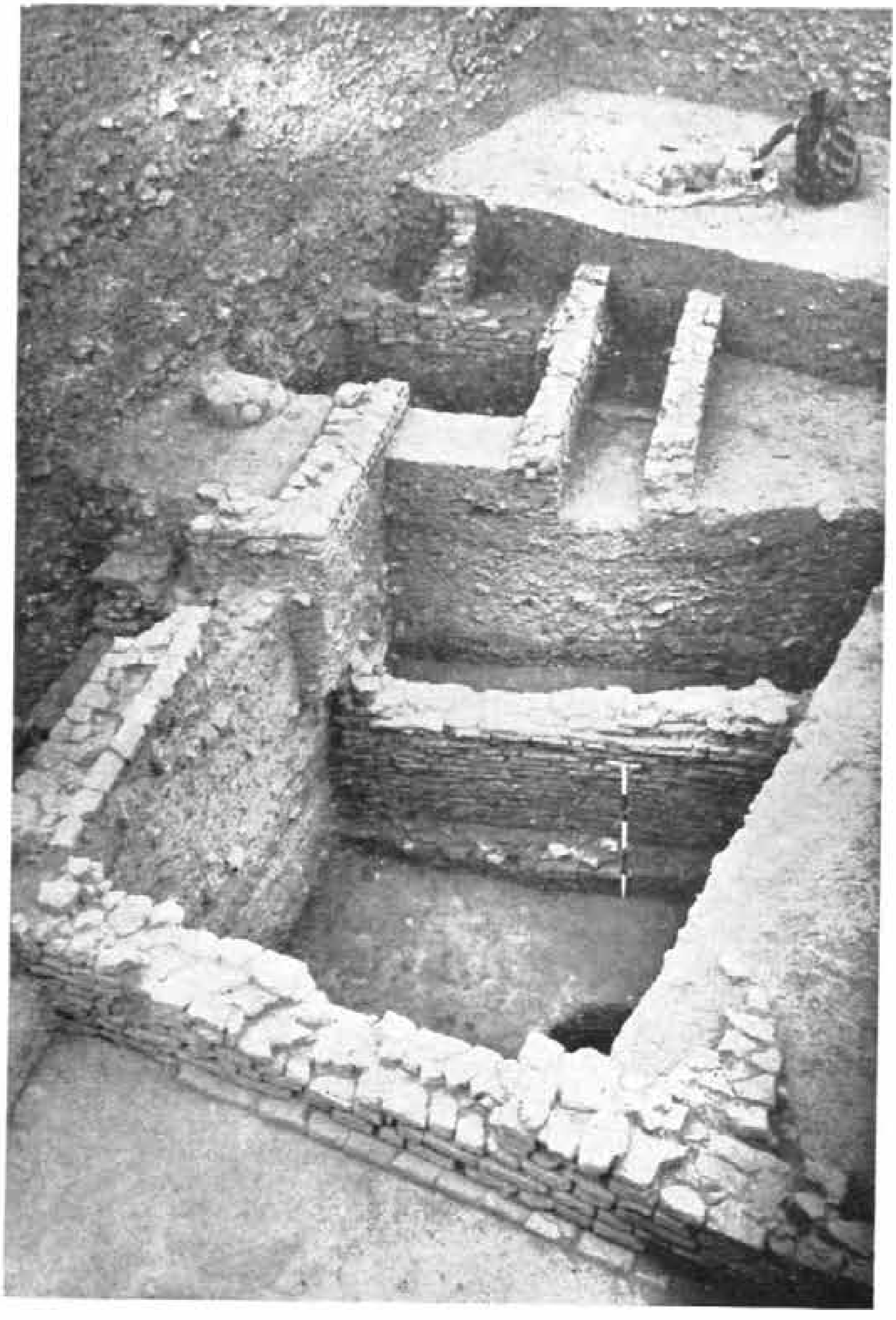


B

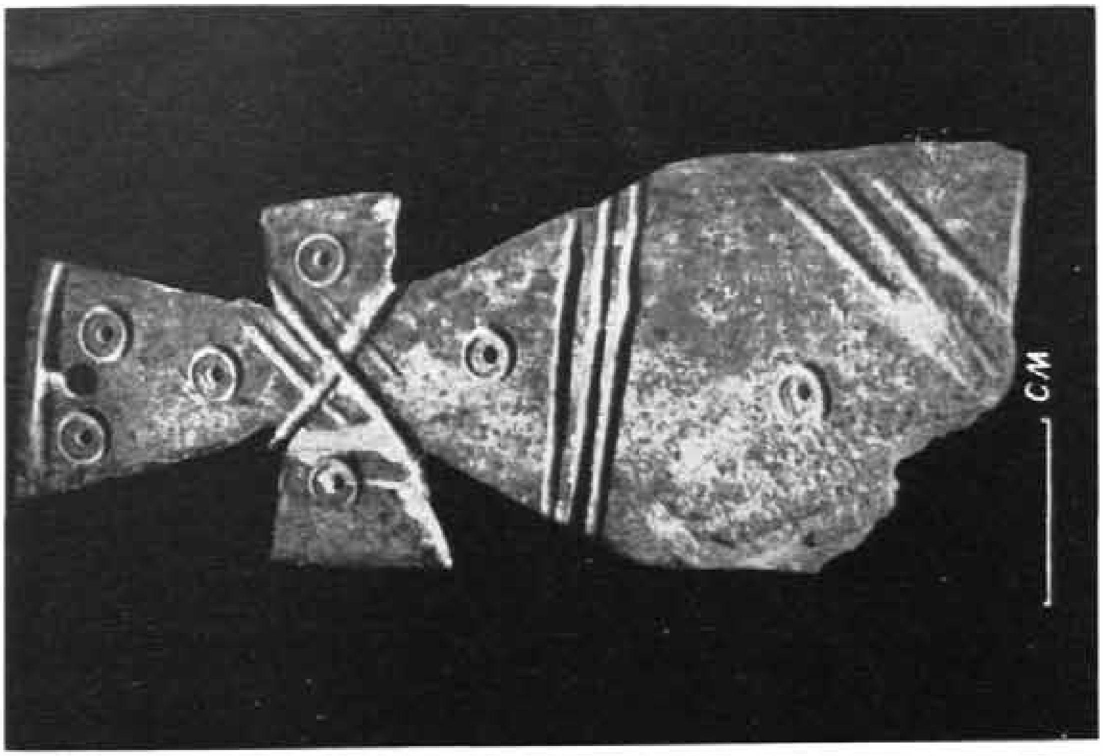


C

Moradhwaj: A, *excavated structure*; B *and* C, *image of Buddha*. *See p. 75*



Ayodhya: remains of house-complex. *See p. 77*

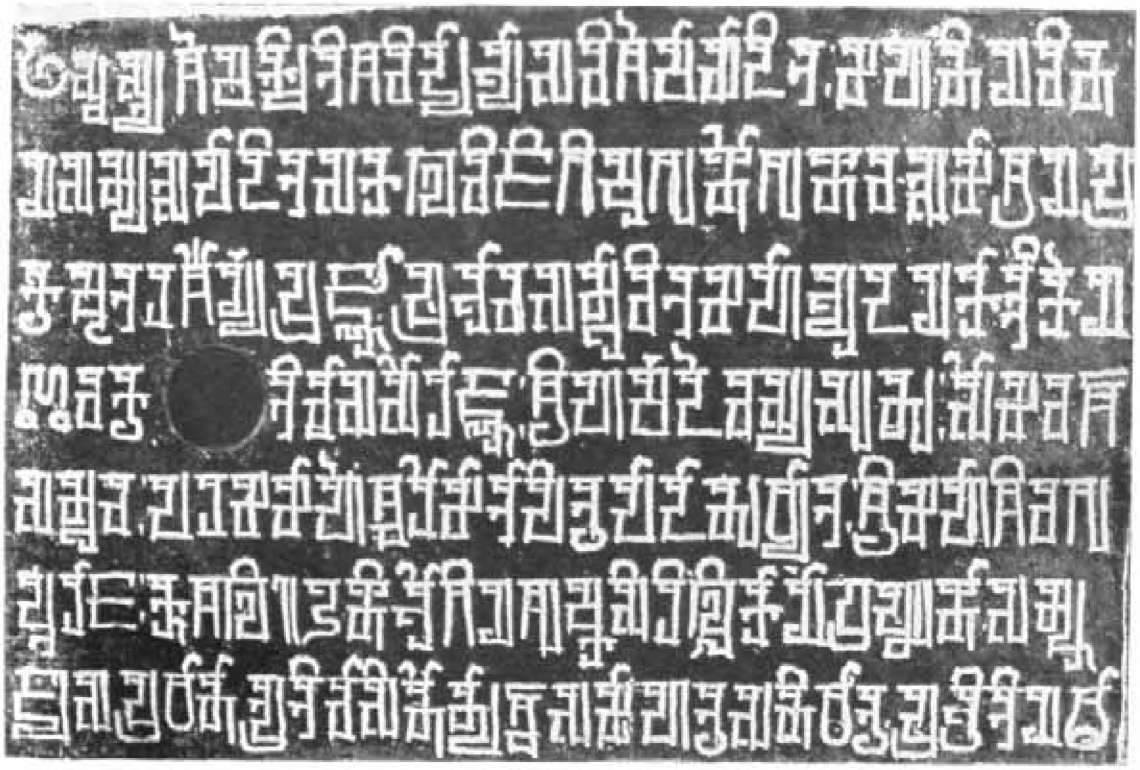


B

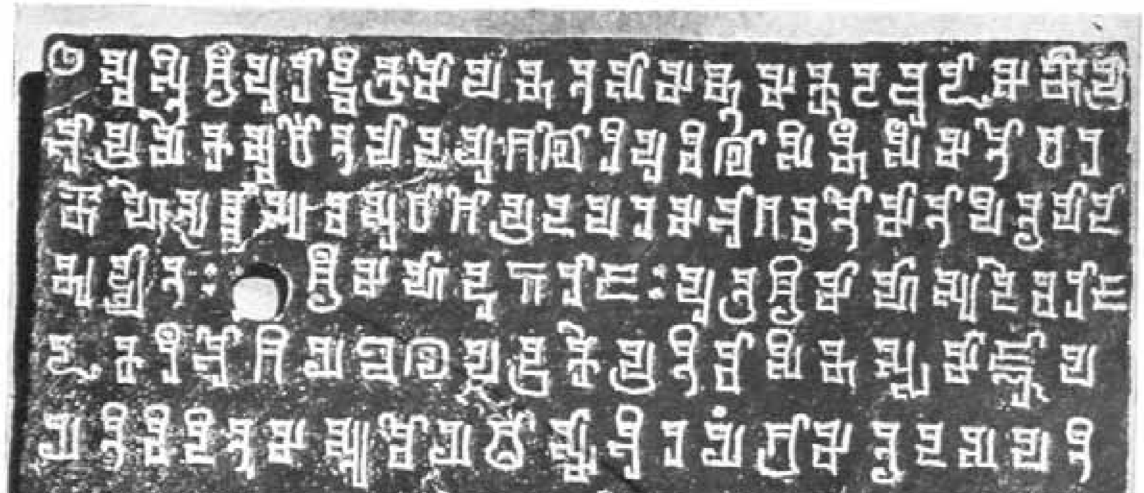


A

Hulas: A, *excavated section and circular oven, Period I*; B, *eye-goddess made of tortoise shell, Period III.* *See p.* 82



A



B

Malhar: A, *Copper-plate of Somavamsi king Maha-siva-gupta-raja*; B, *Mahasamund*: *Copper-plate of Sudevaraja*. *See p. 87*



A



B

Khakhrechi: A, *inscription from dargah of Ahmed Shah I*; B, *Khuldabad: record of Alaud-Din Ahmed II. See pp. 92 and 93*



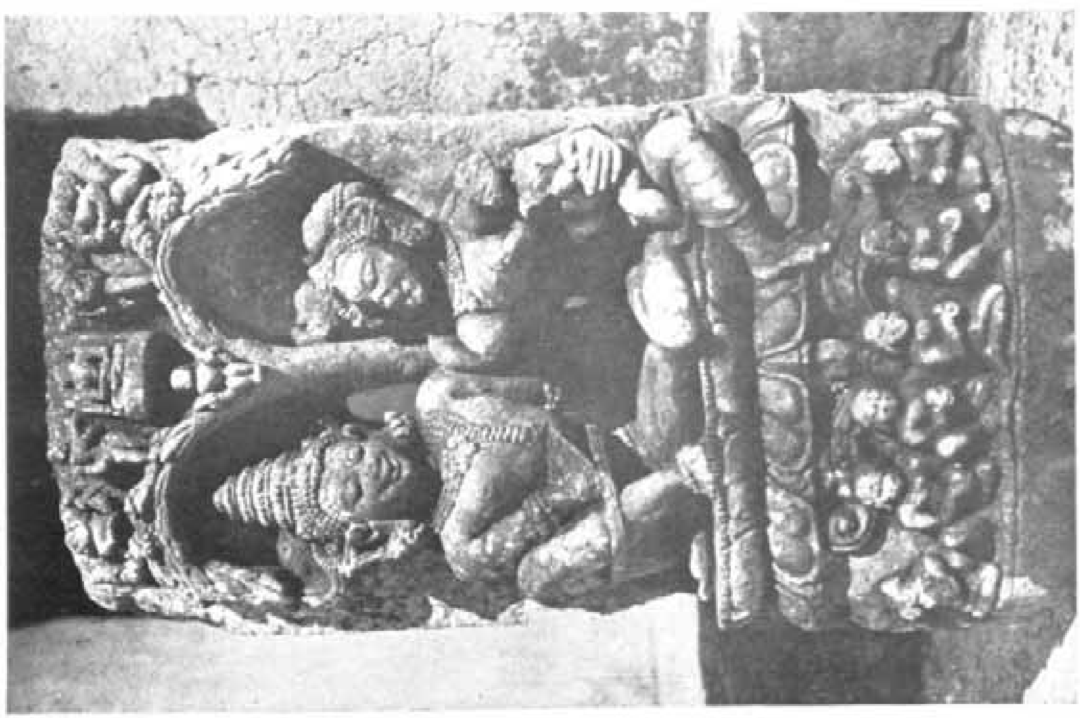


A B

Chapda: A, Karttikeya; B, Ujjain: Vishnu. See pp. 99 and 103



B



A

Ajodhia: A, *Jaina images couple;* B, *Kechala: Ambika.* *See p. 104*

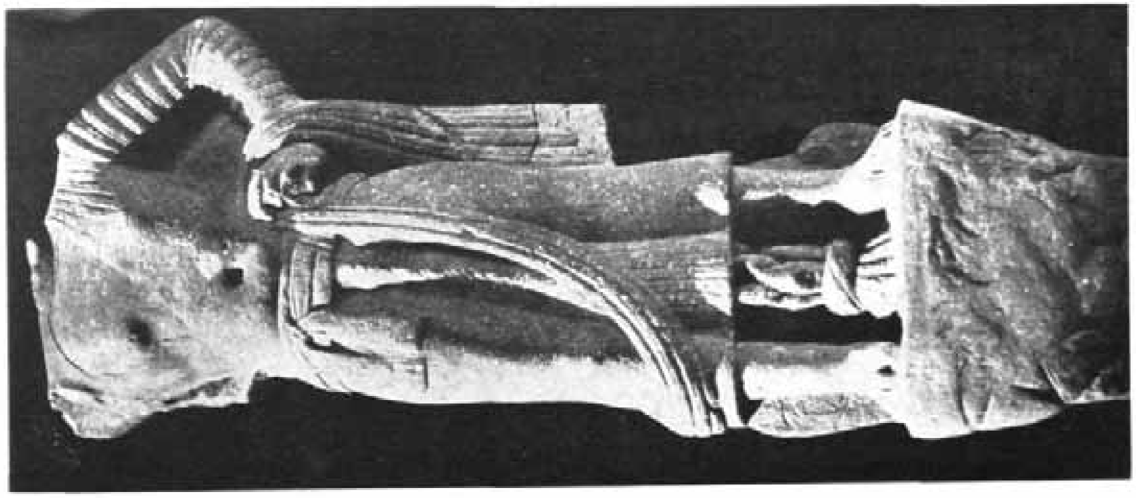


A



B

Government Museum, Almora: A, *matrika panel*; B, *Government Museum, Mathura: Anantasayi Vishnu.* *See pp. 115 and 117*

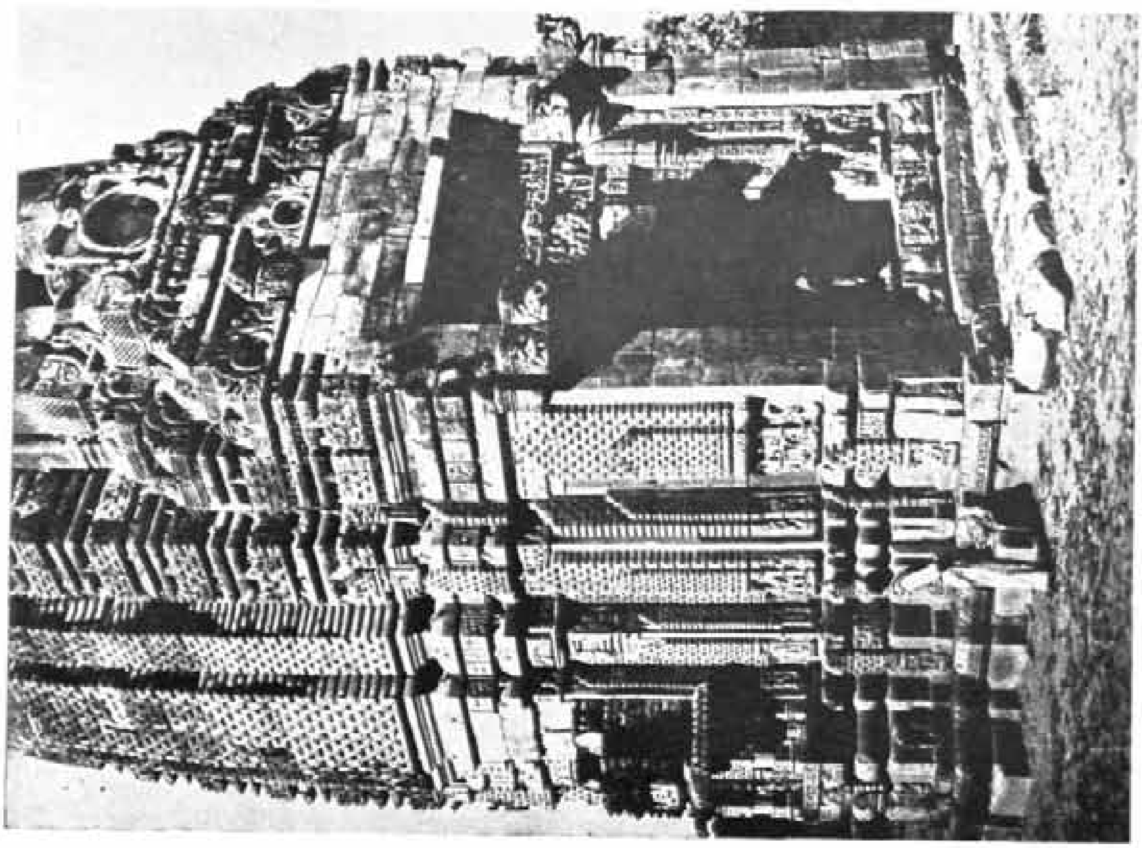


B

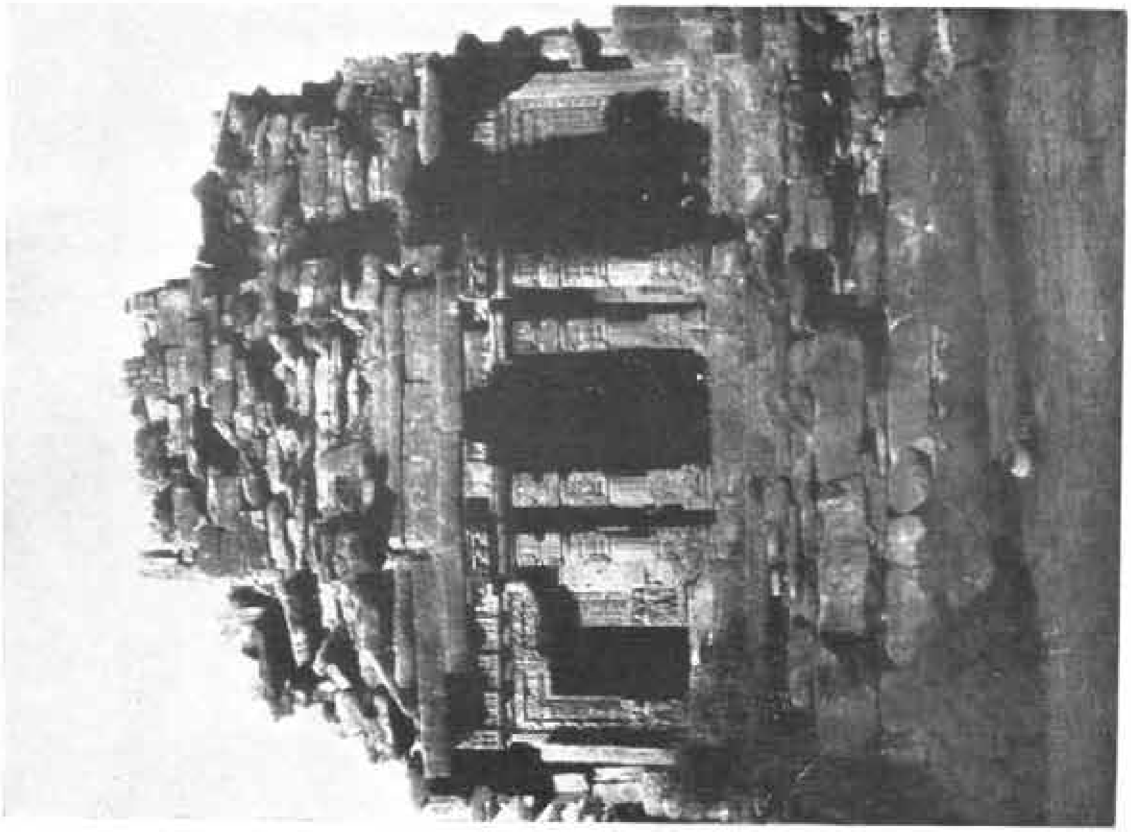


A

State Museum, Lucknow: A, *terracotta figurines of a lady;* B, *Government Museum, Mathura: mutilated image of Buddha.* *See p. 117*

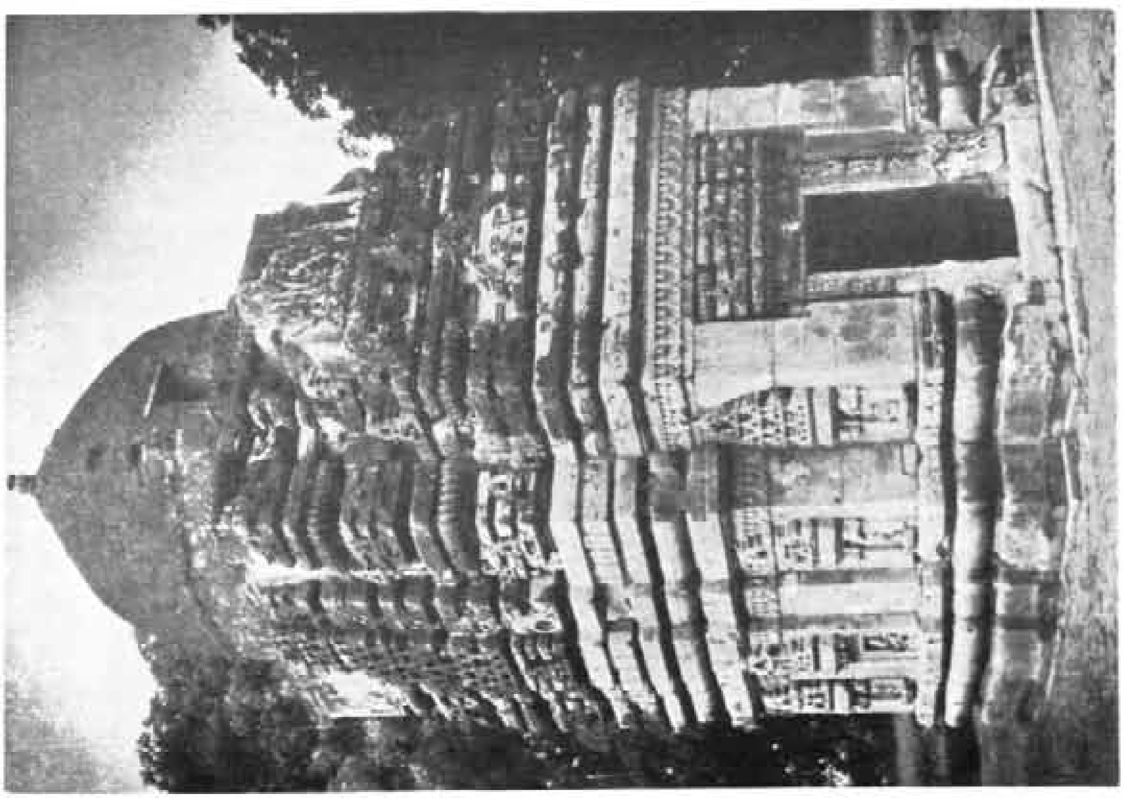


A

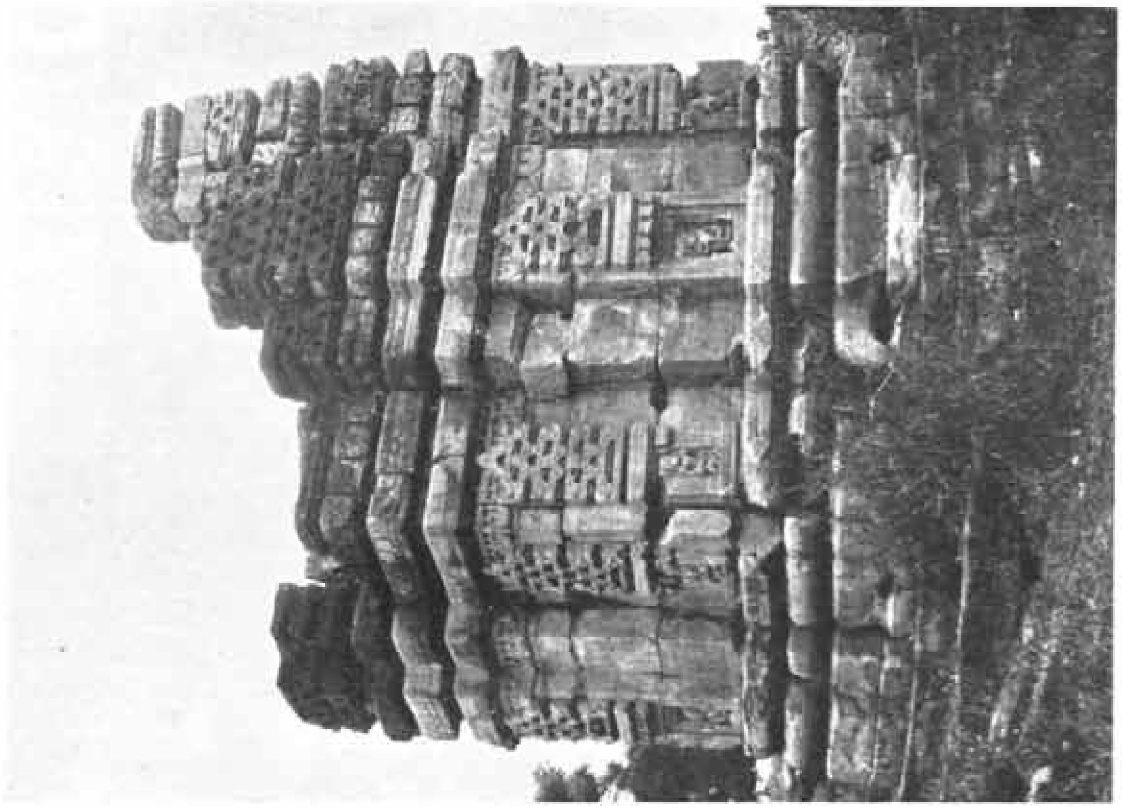


B

Barwasagar: A, *Jarai-math*; B, *Asan*: *triple-shrined temple*. *See p.* 120

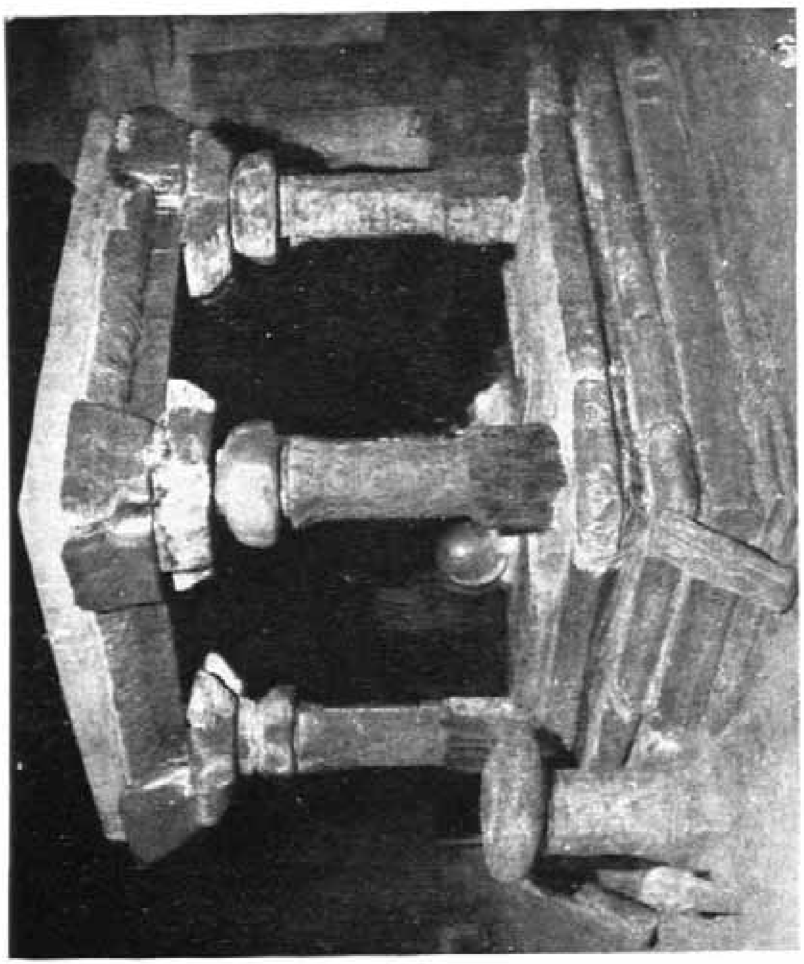


A



B

Amod: A. *Ramesvara temple*; B. *Danebaba temple*. *See p. 120*

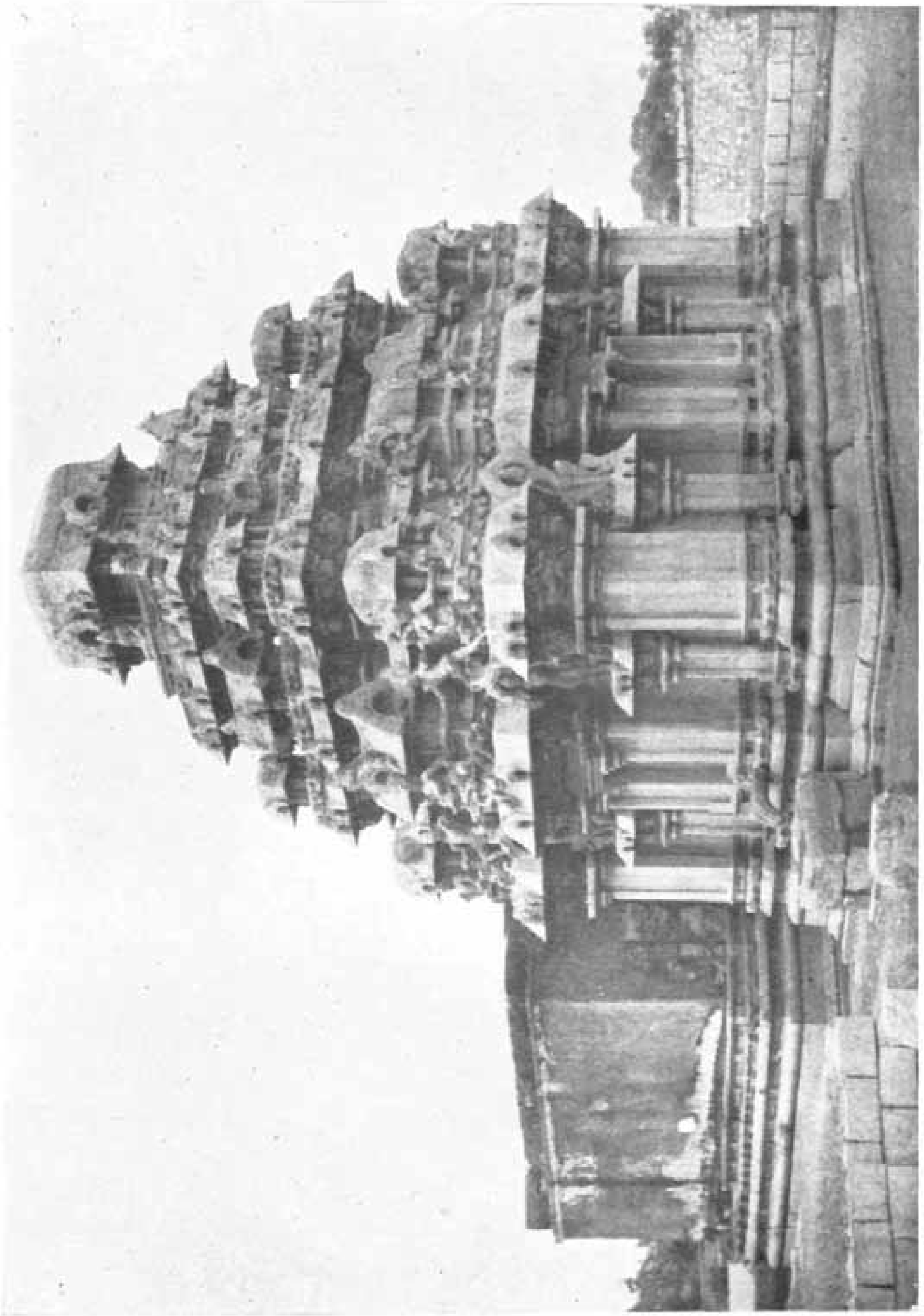


A



B

Alur: A. nandi-mandapa of Dasesvara temple; B. Talakad: Parsvanatha. *See pp. 122 and 123*



Narasamangala: Ramesvara temple. *See p. 122*

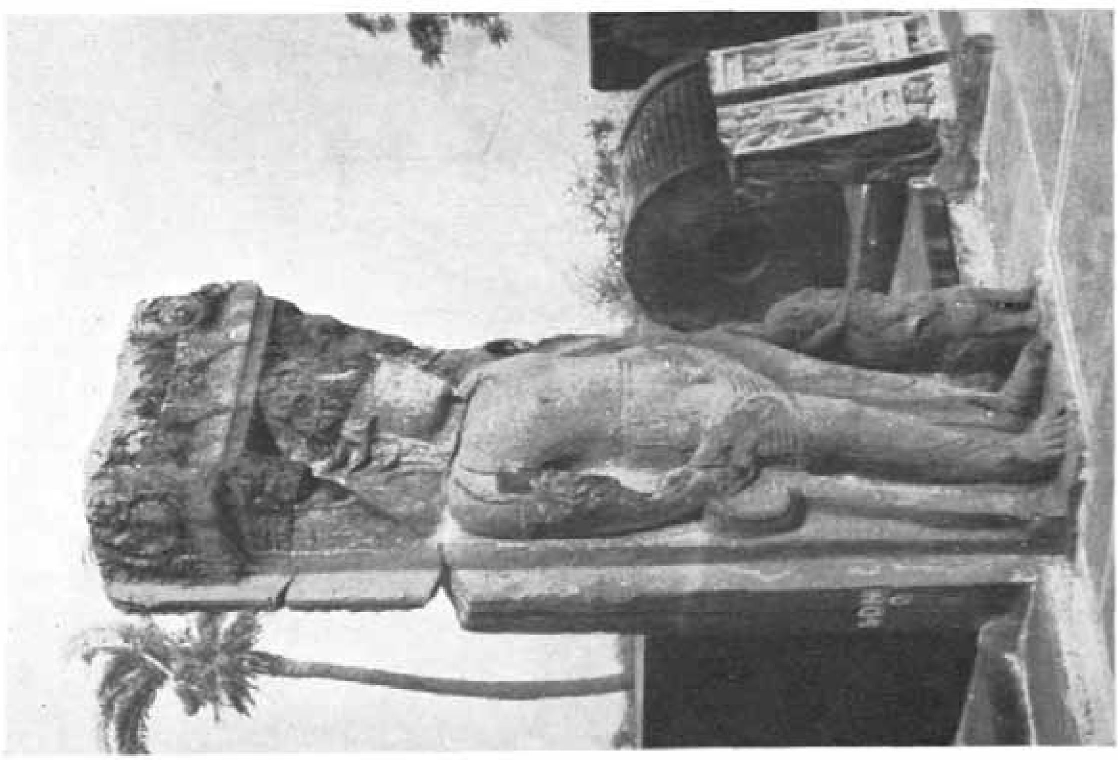


A



B

Malhar, Bhima-Kichaka ruins: A, *before and* B, *after conservation.* *See p. 125*

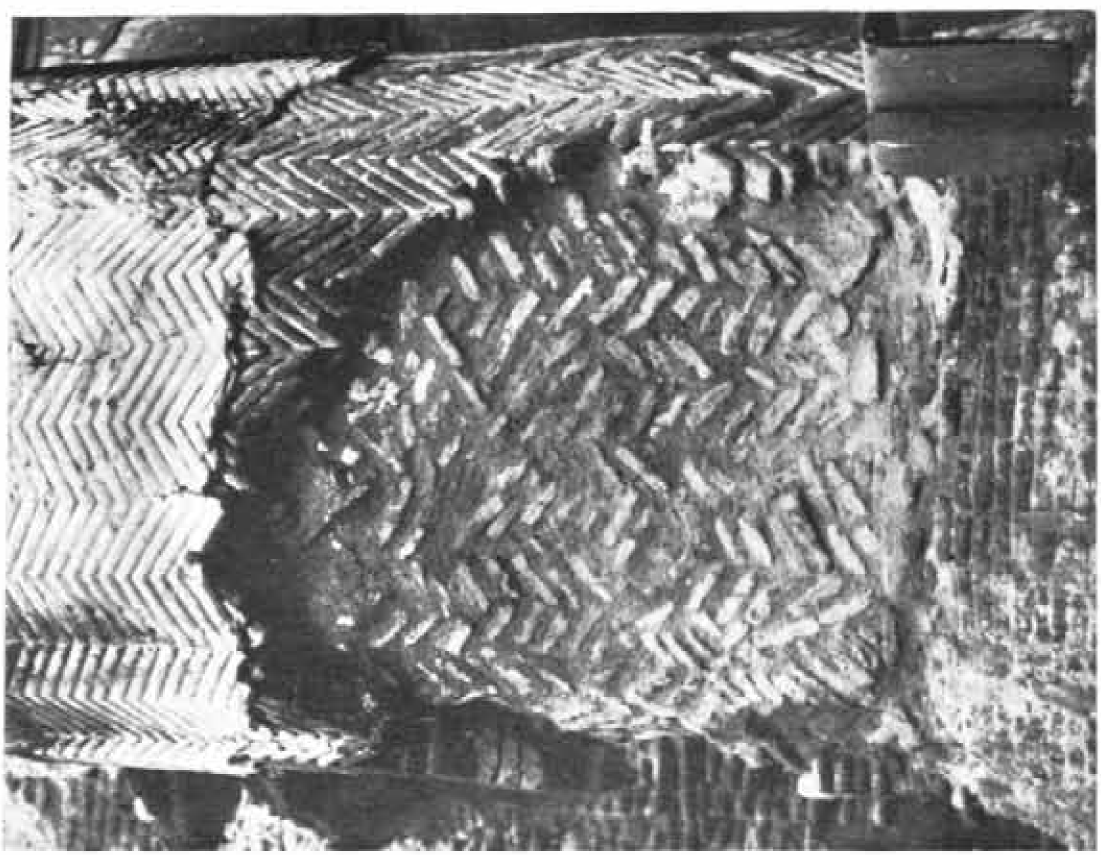


A

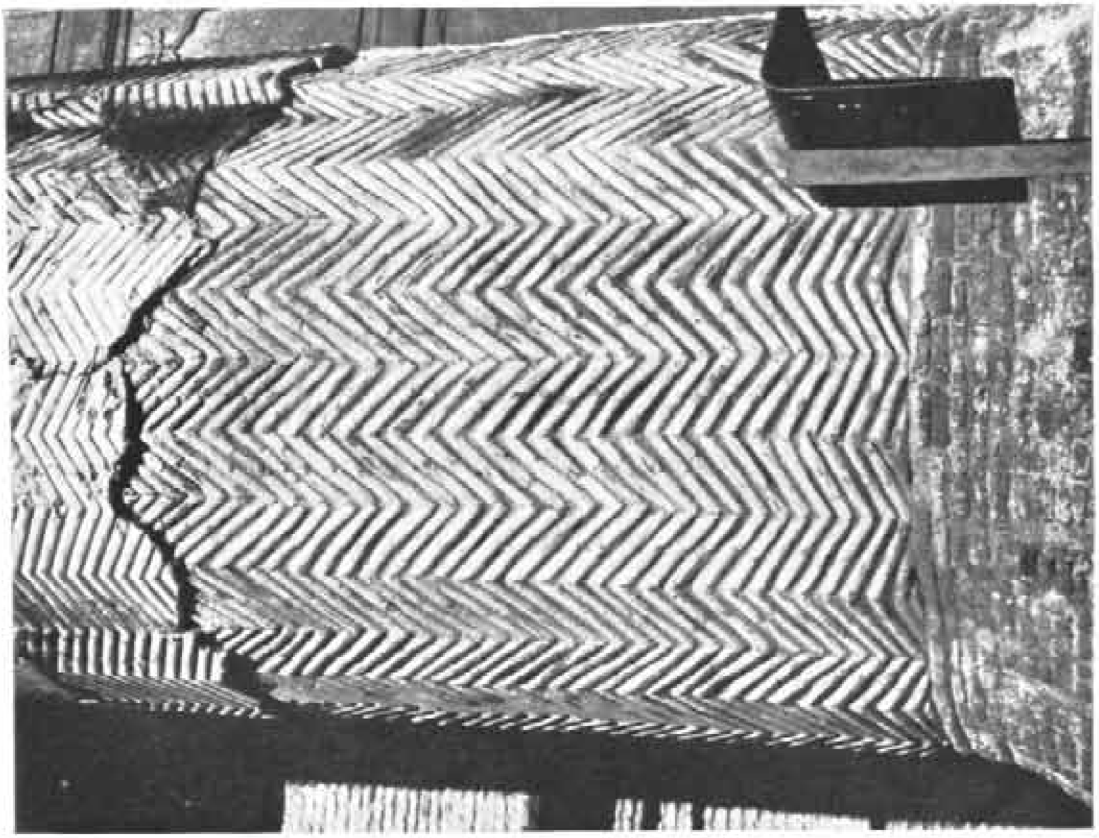


B

Sondni, Yasodharman's pillar of victory: A, *before and* B, *after conservation.* *See p. 127*



A



B

Delhi, Qudsiya gate: A, before and B, after conservation. *See p. 128*



A

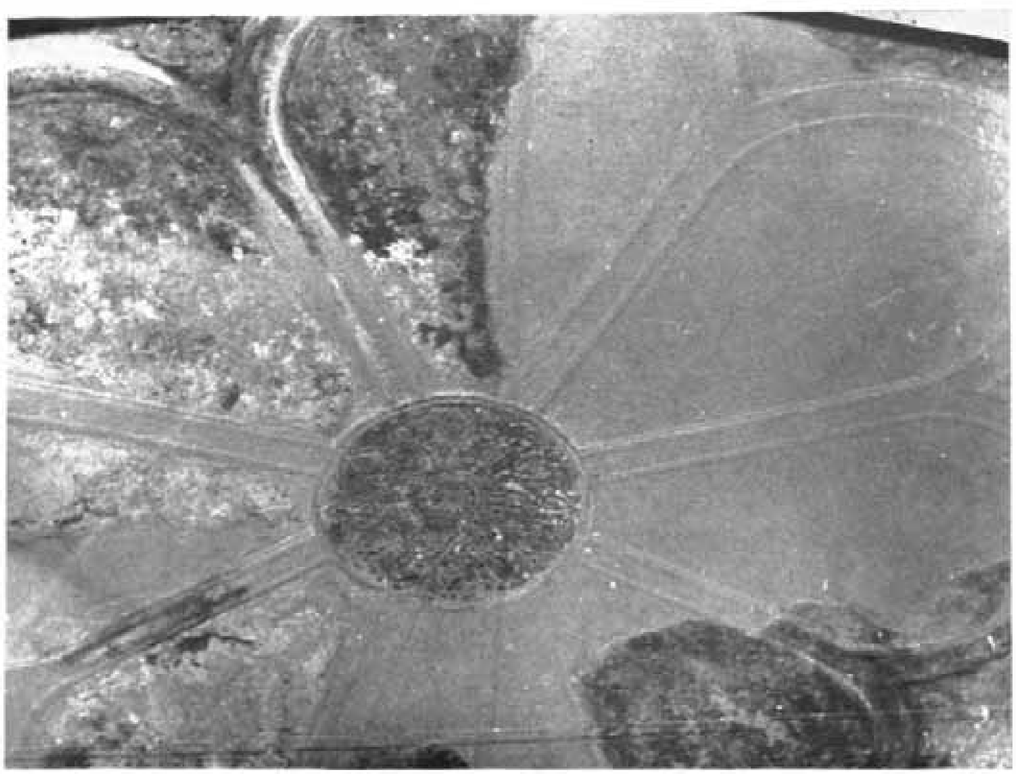


B

Delhi, Jantar Mantar: A, *during and* B, *after conservation.* *See p. 128*



A



B

Delhi, Purana Qila: A, *before and* B, *after conservation.* *See p. 128*

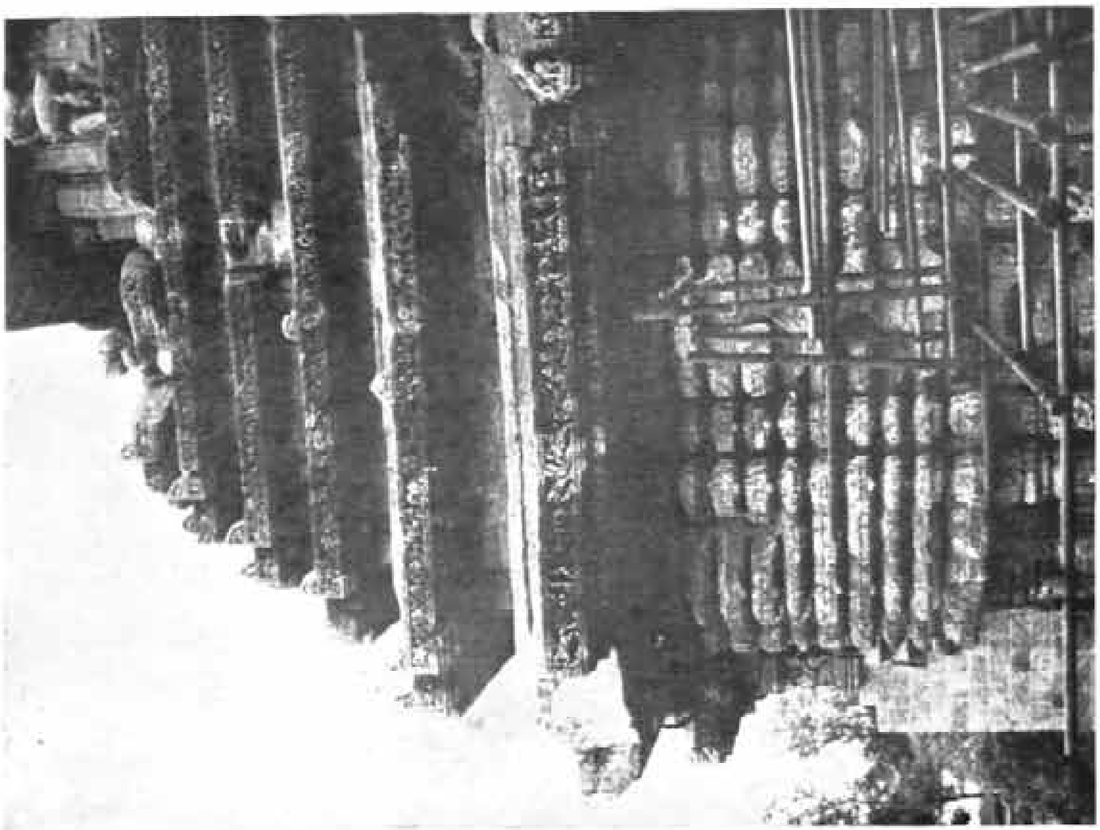


A

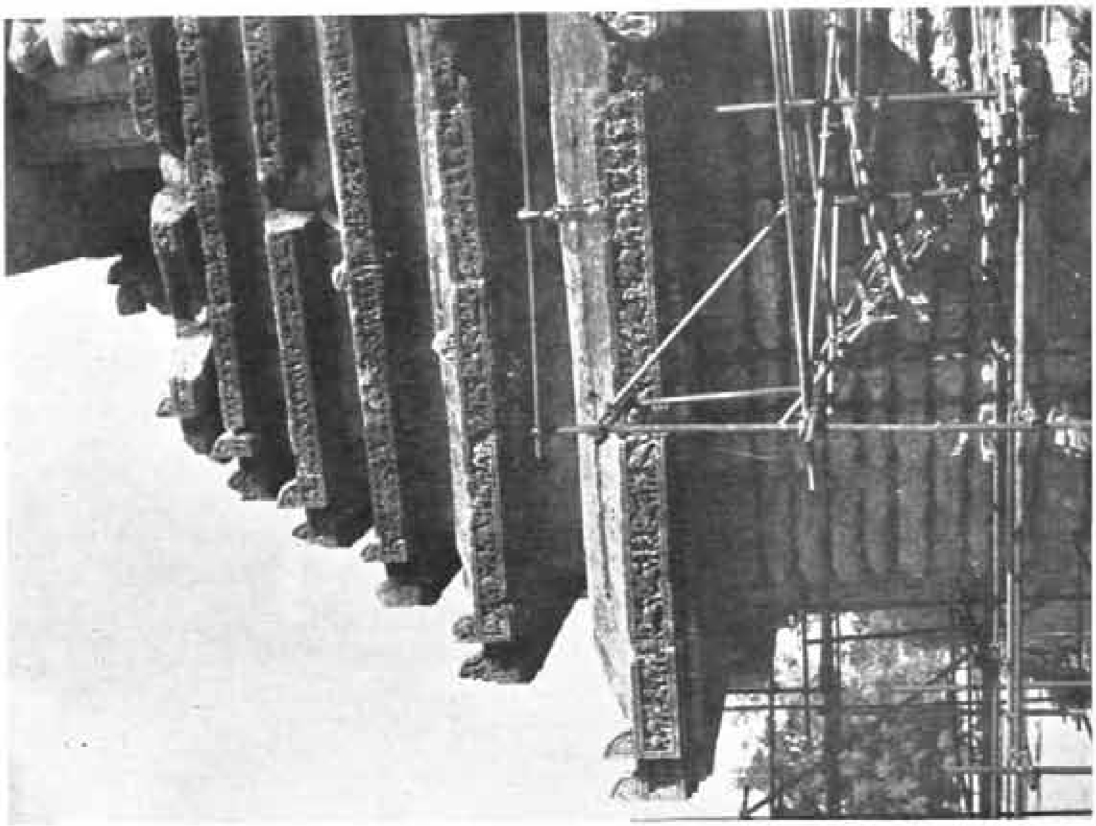


B

Bhubaneswar, Bakesvara temple: A, *during and* B, *after conservation*. *See p. 129*



A



B

Konarak, Sun temple: A, before and B, during conservation. *See p. 129*

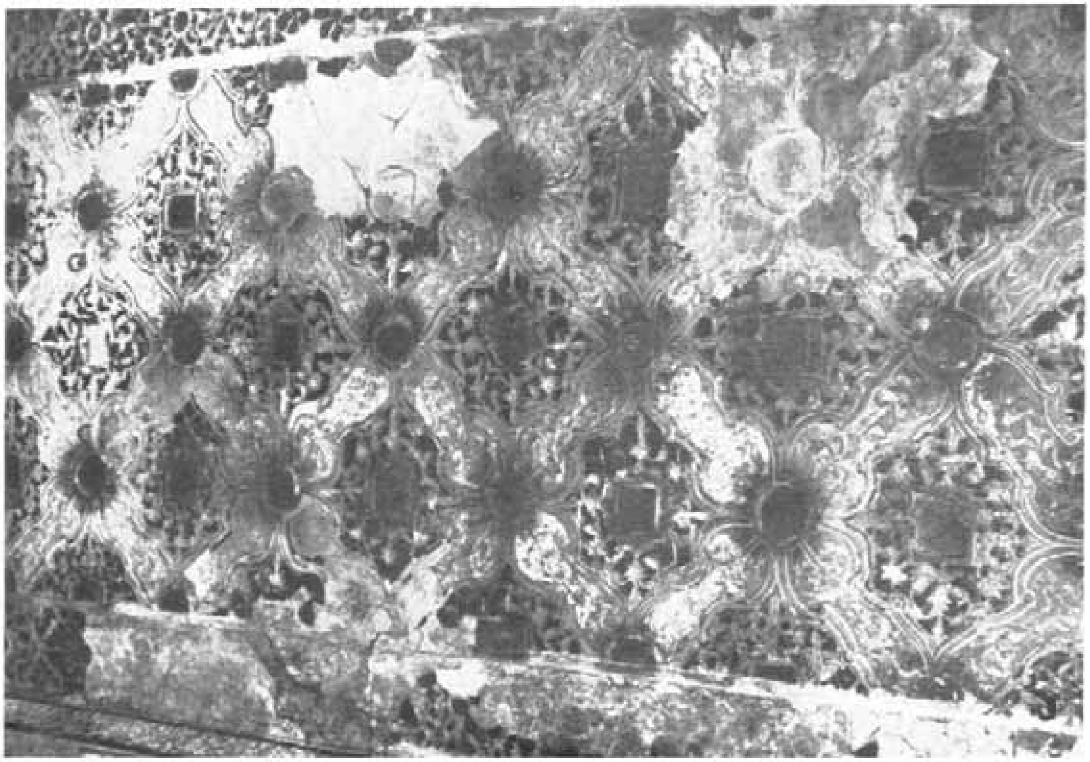


A

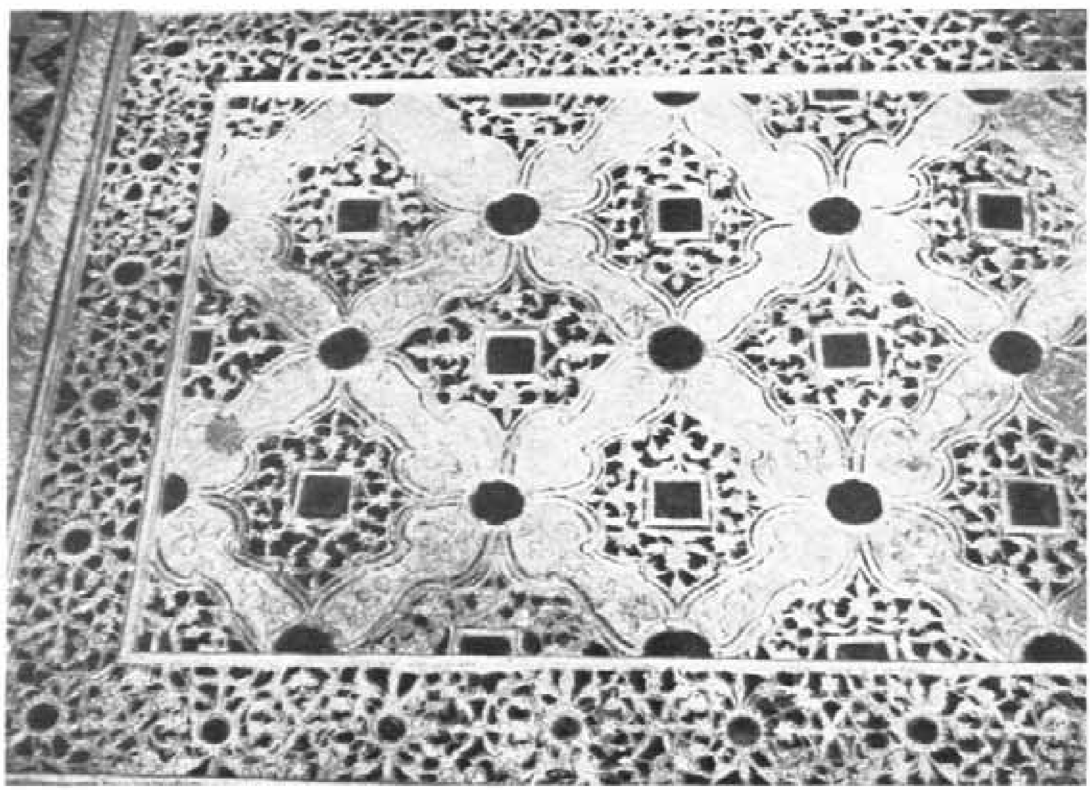


B

Aihole, Goudergudi: A, *before and* B, *after conservation.* *See p. 132*



A



B

Agra, Sheesh Mahal: A, *before and* B, *after conservation.* *See p. 134*

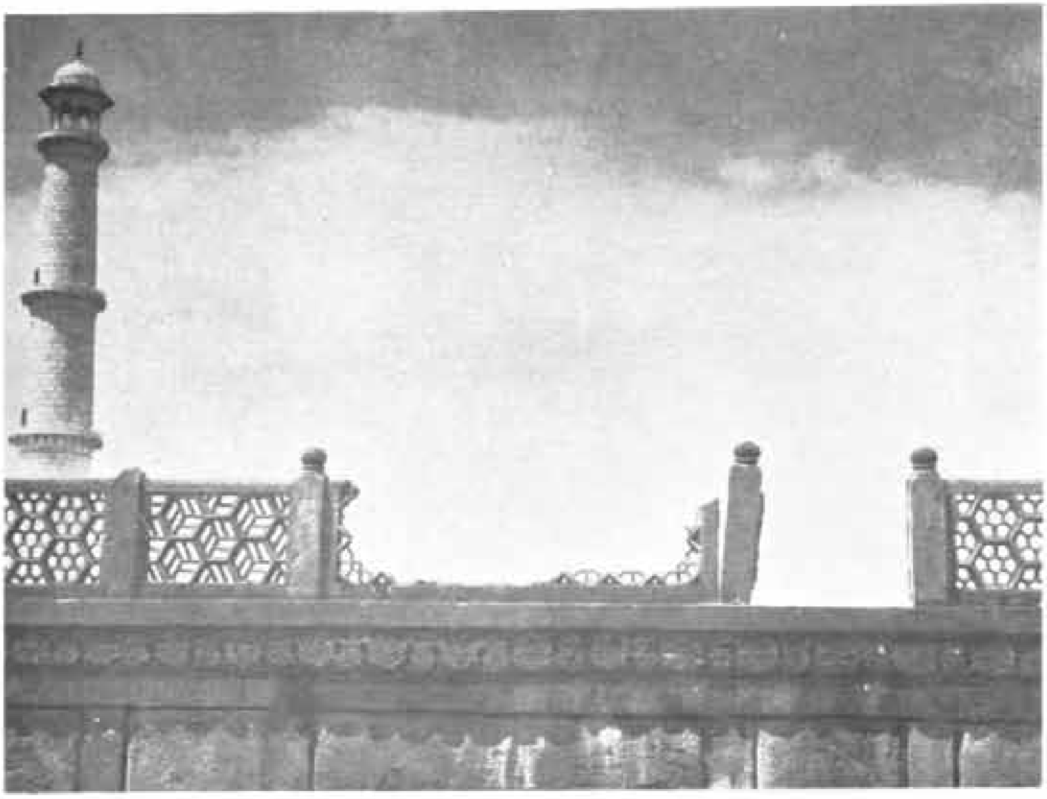


A

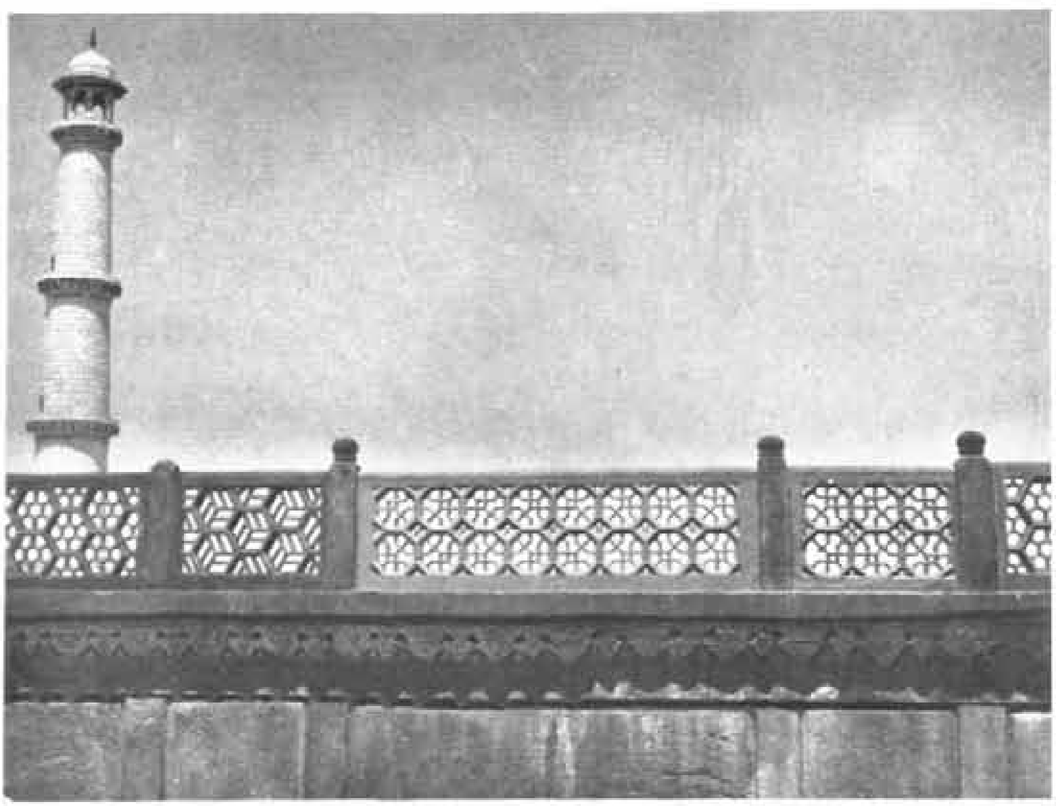


B

Agra, Mehman-Khana of Taj Mahal: **B** *before and* **A** *after restoration.* *See p. 134*



A



B

Agra, Mehman Khana of Taj Mahal: A, *before and* B, *after restoration*. *See p. 134*



A



B

Chandpur, Belmori group of temples: A, *before and* B, *after conservation.* *See p. 135*

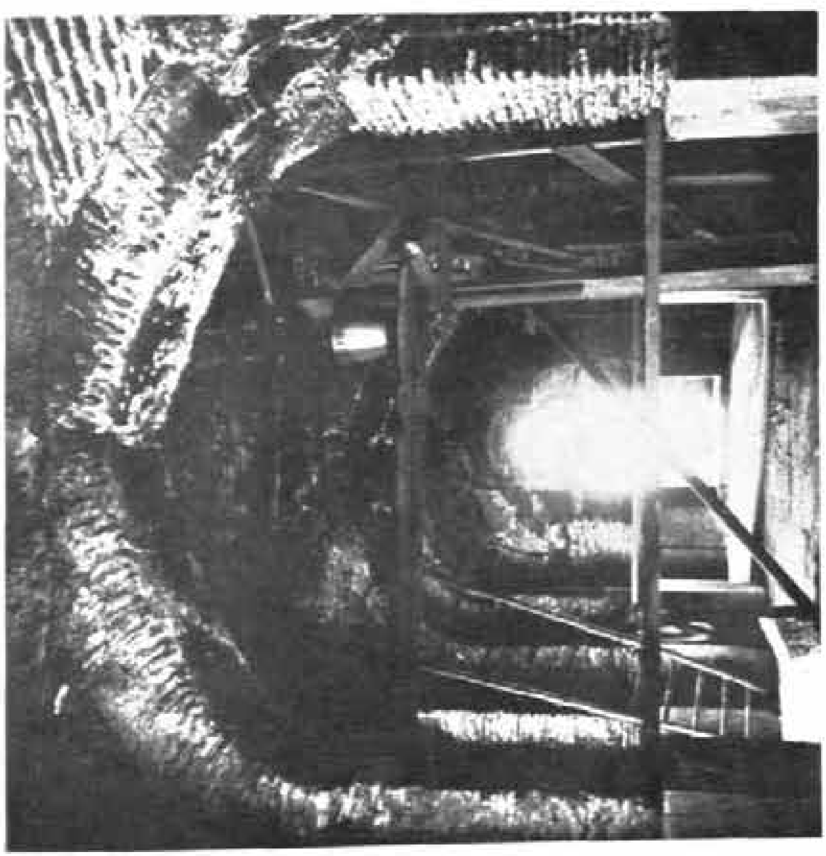


A

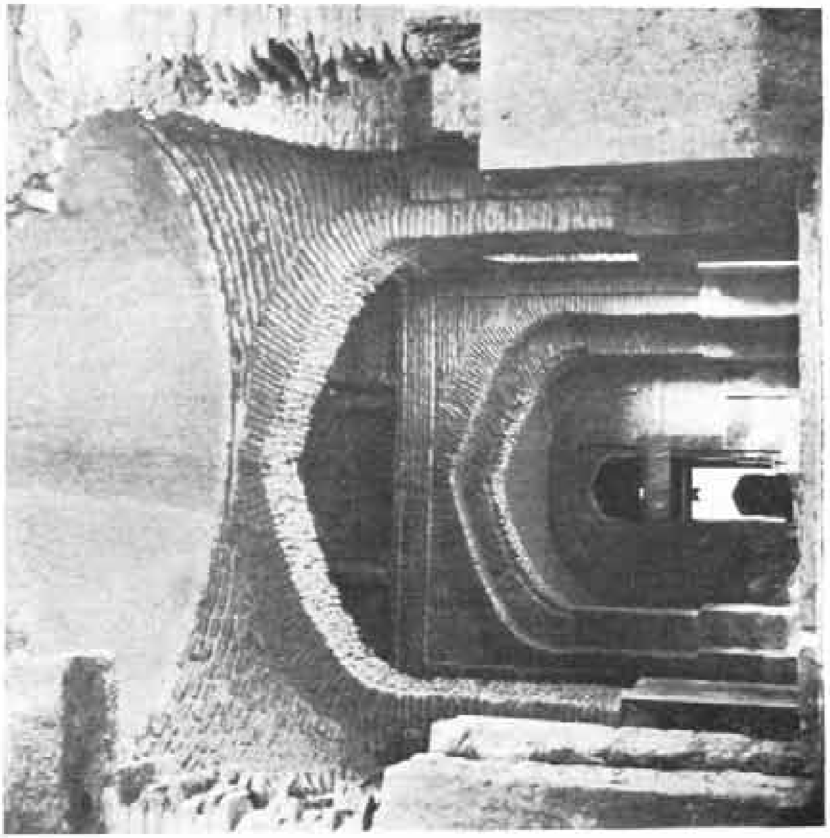


B

Chandpur, Vishnu and Lakshminarayana shrines: A, *before and* B, *after conservation*. *See p. 136*



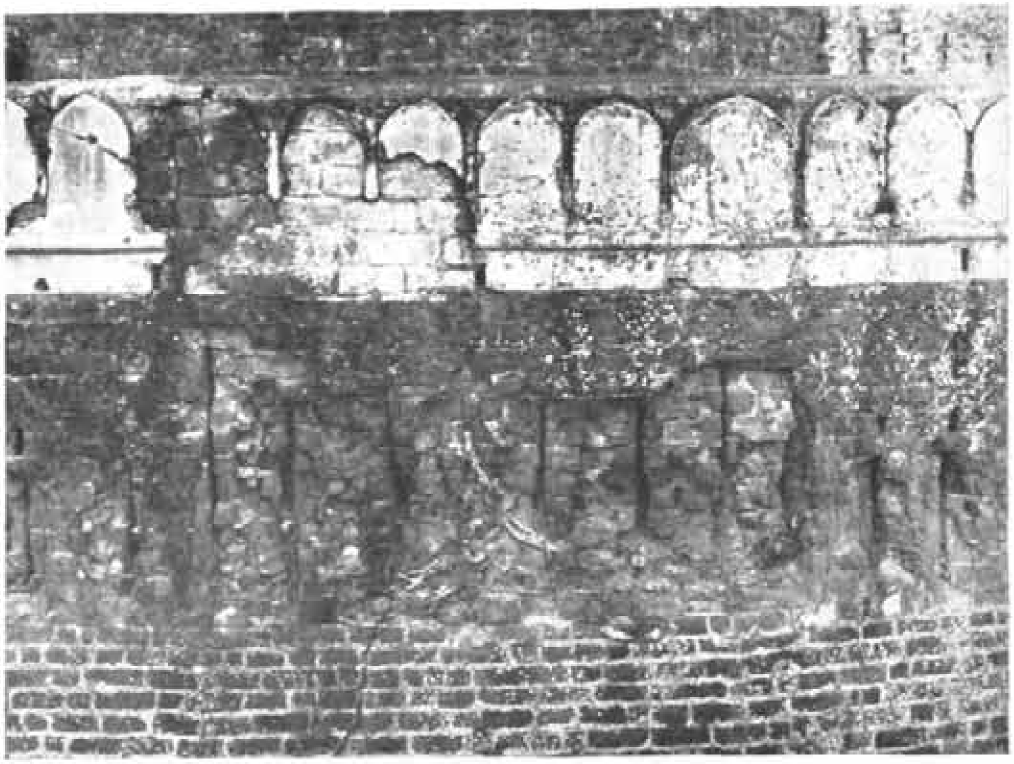
A



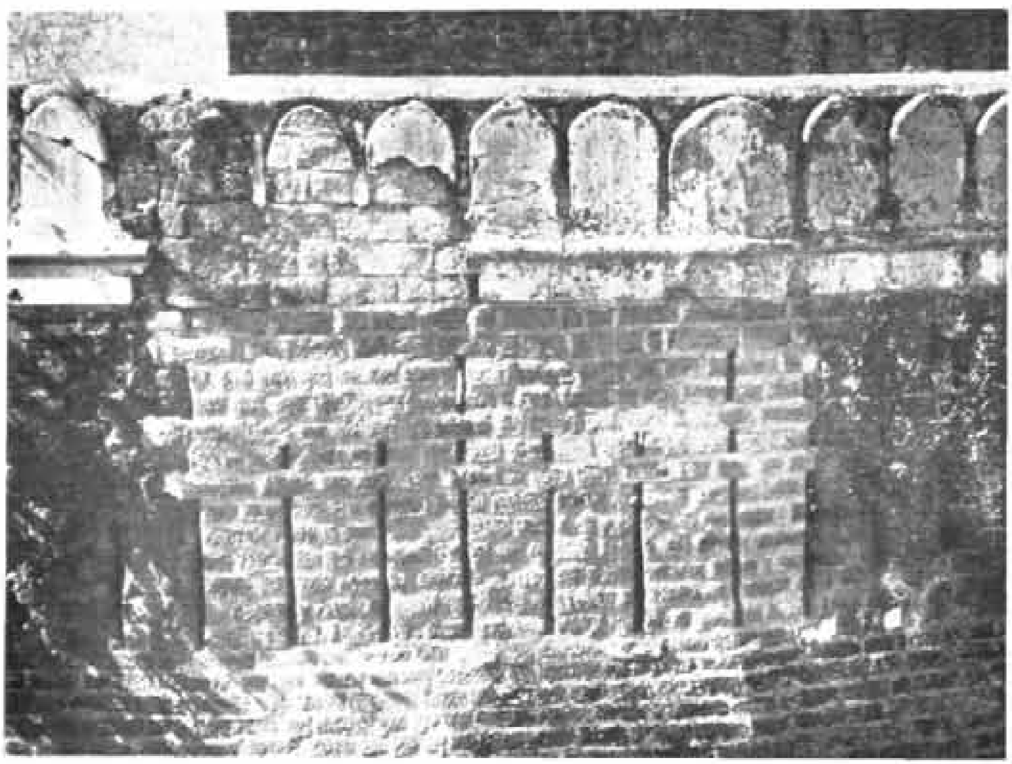
B

Srinagar, Akhun Mulla Shah mosque: A, before and B, after conservation. *See p. 140*

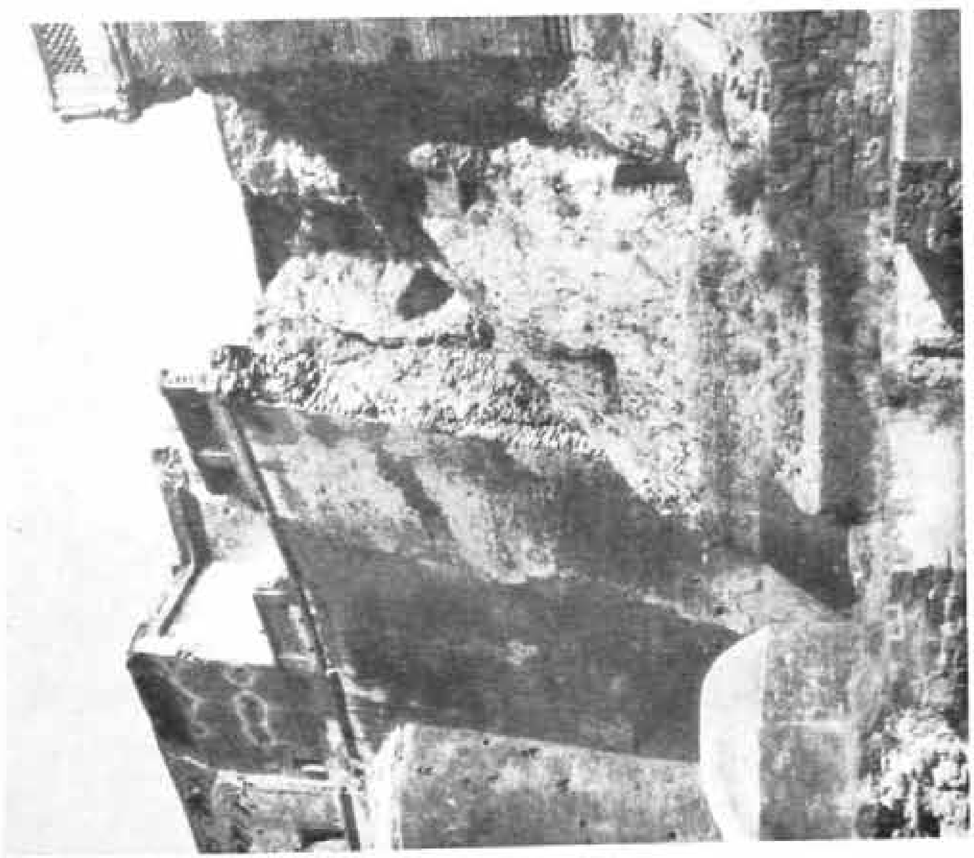
A



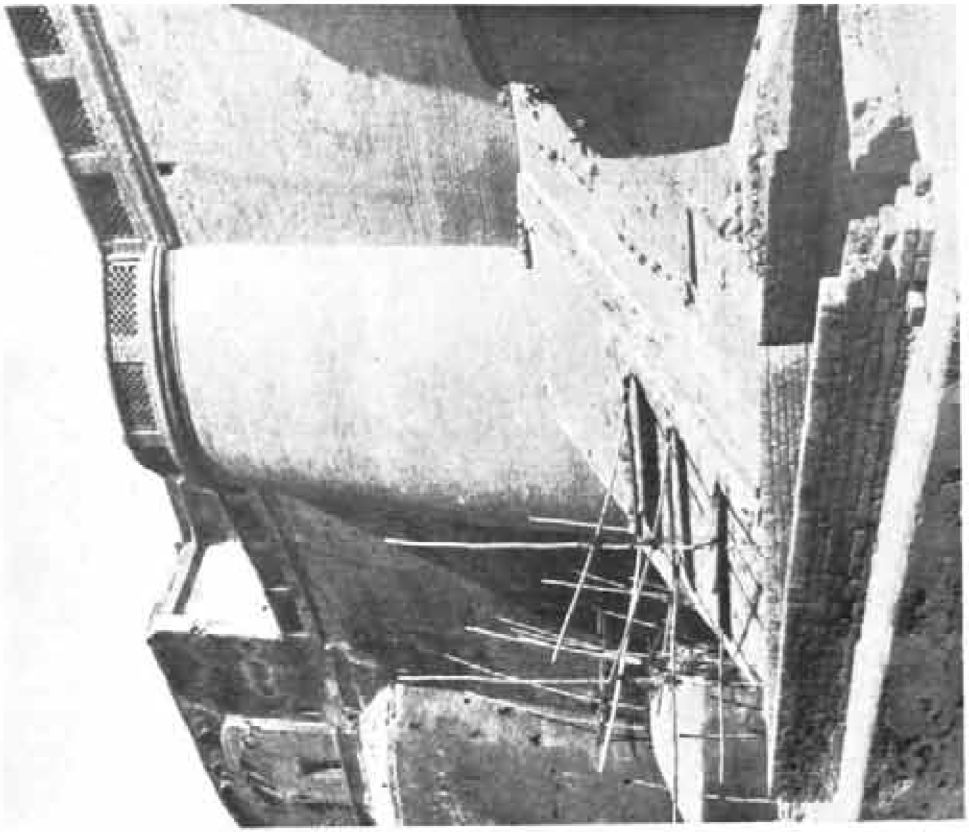
B



Ramnagar, fort: A, *before and* B, *after conservation*. *See p. 140*



A

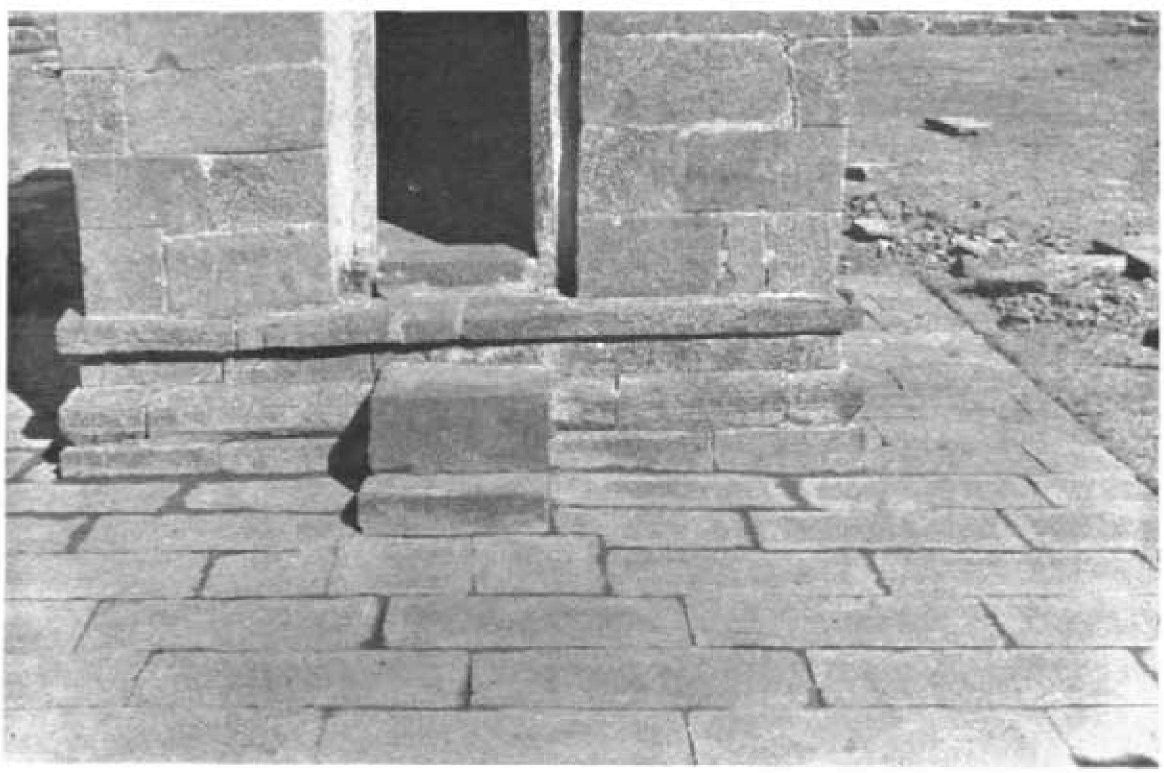


B

Bhatinda, fort: A, before and B, after conservation. *See p. 141*

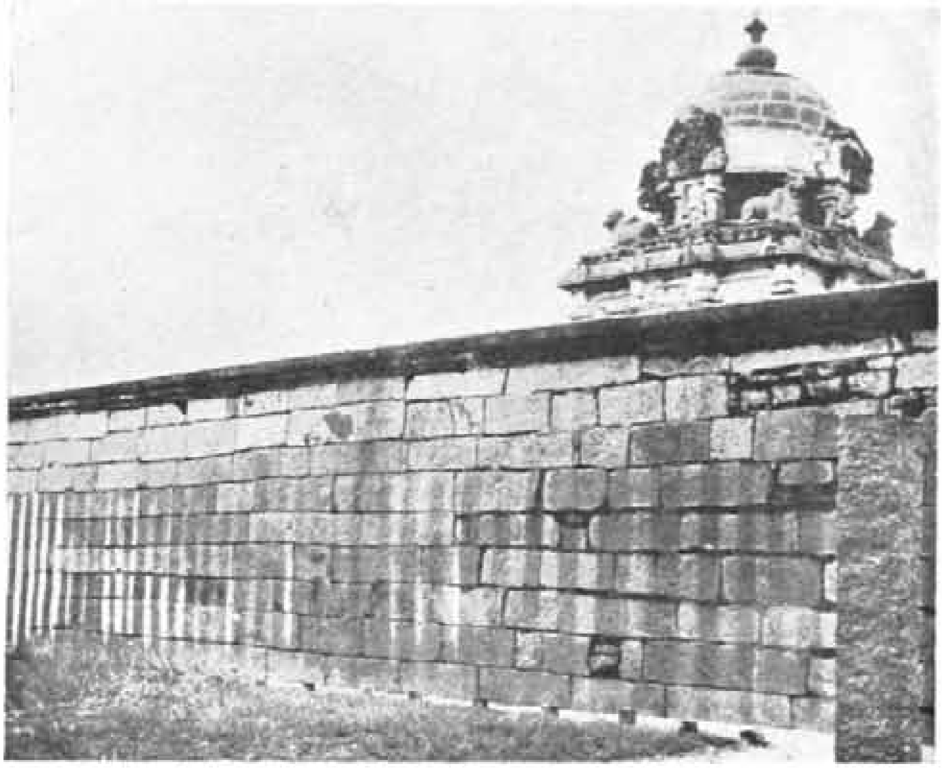


A



B

Adiyamankottai, Garuda shrine of Chennarayaperumal temple: A, *before and* B, *after conservation.* *See p. 142*

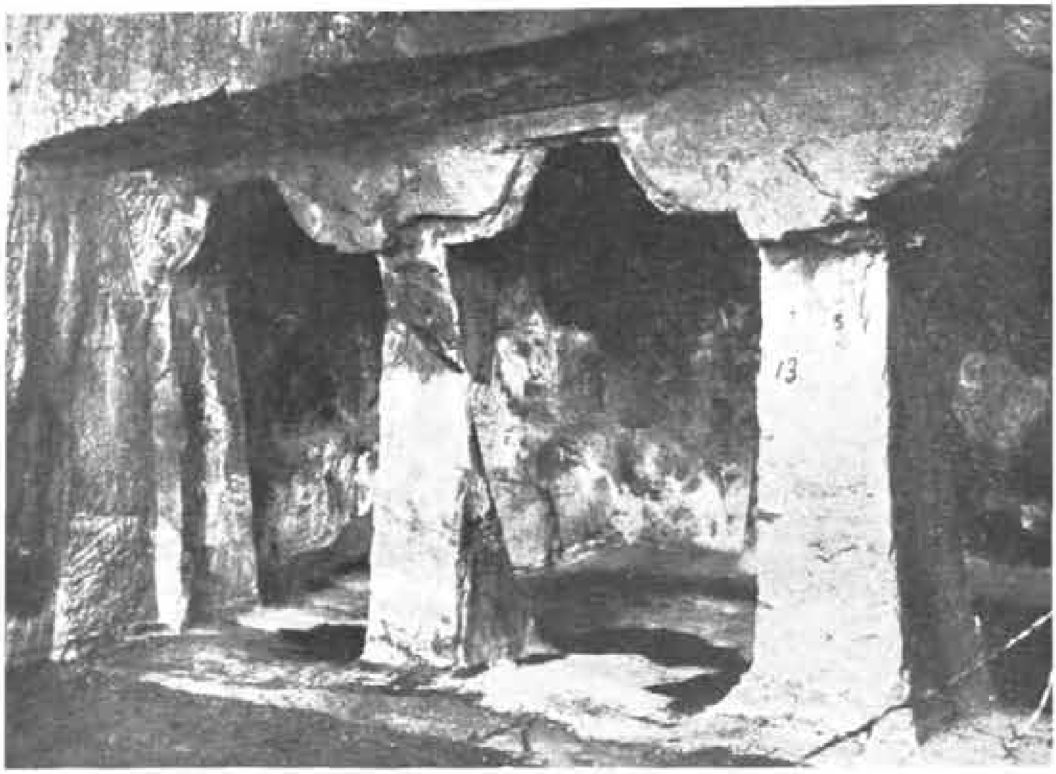


A



B

Melpadi, Somanatheswara temple: A, *before and* B, *after conservation.* *See p. 143*

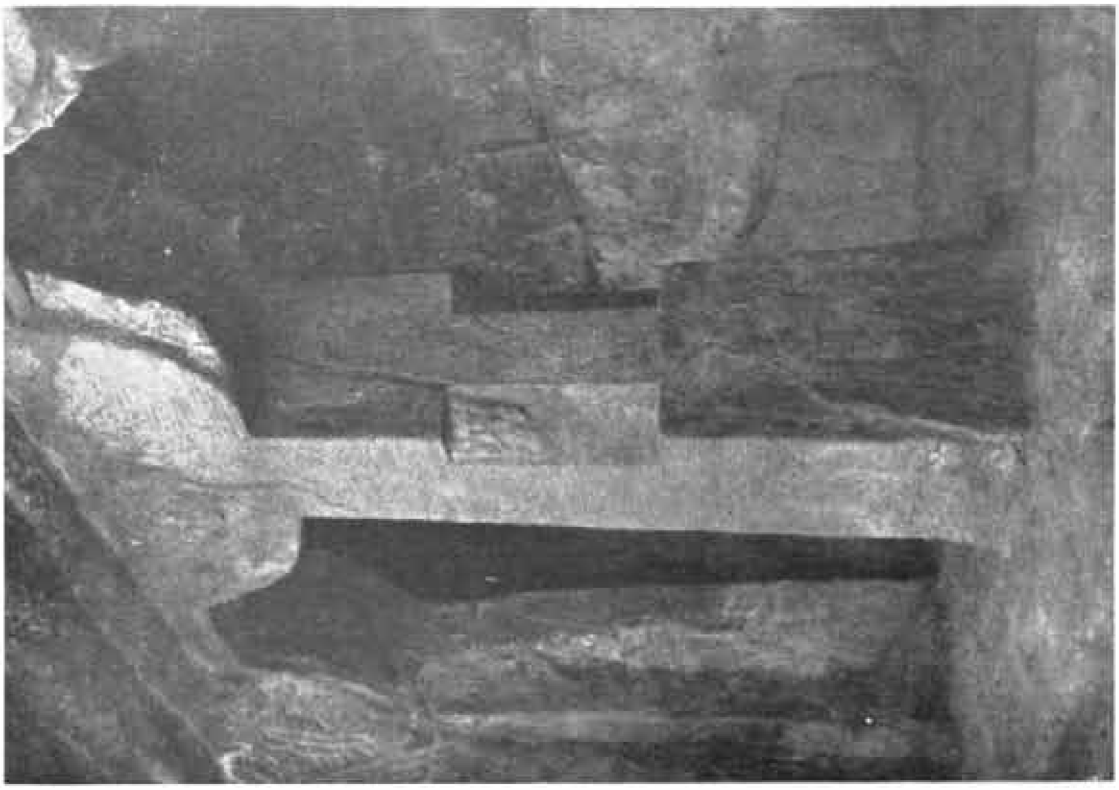


A

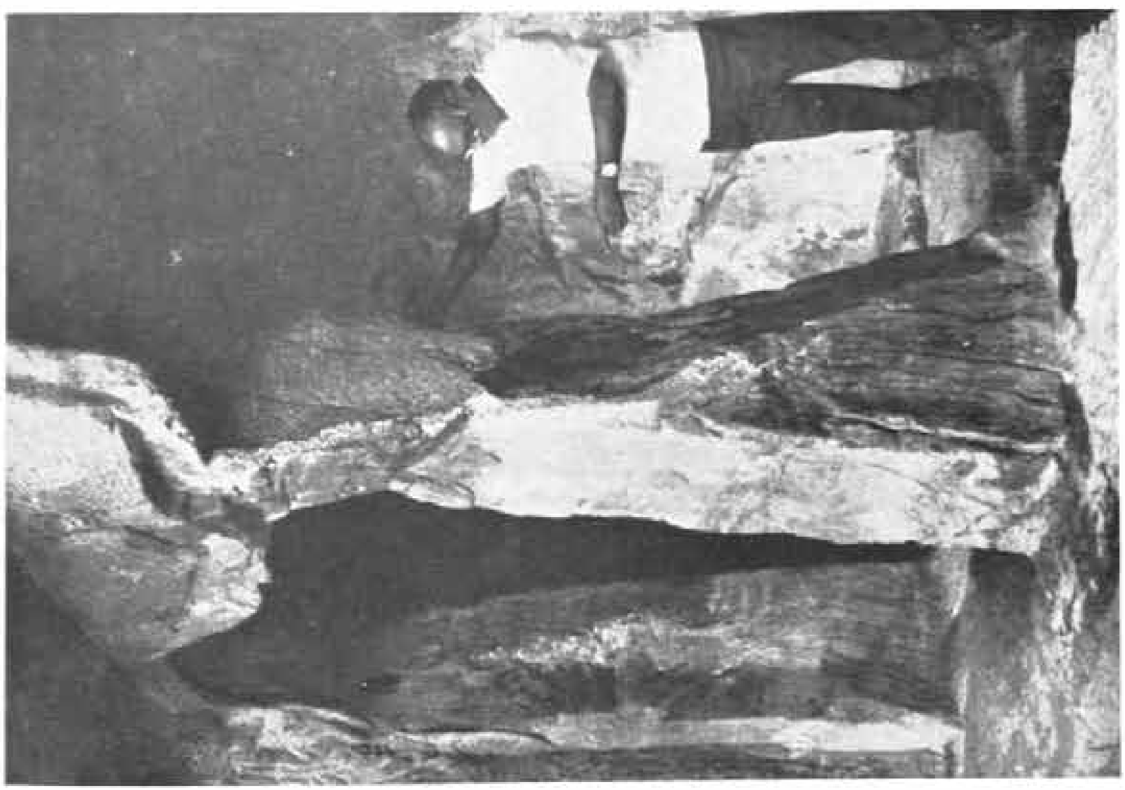


B

Narasamangalam, rock-cut Cave: A, *before and* B, *after conservation.* *See p. 143*

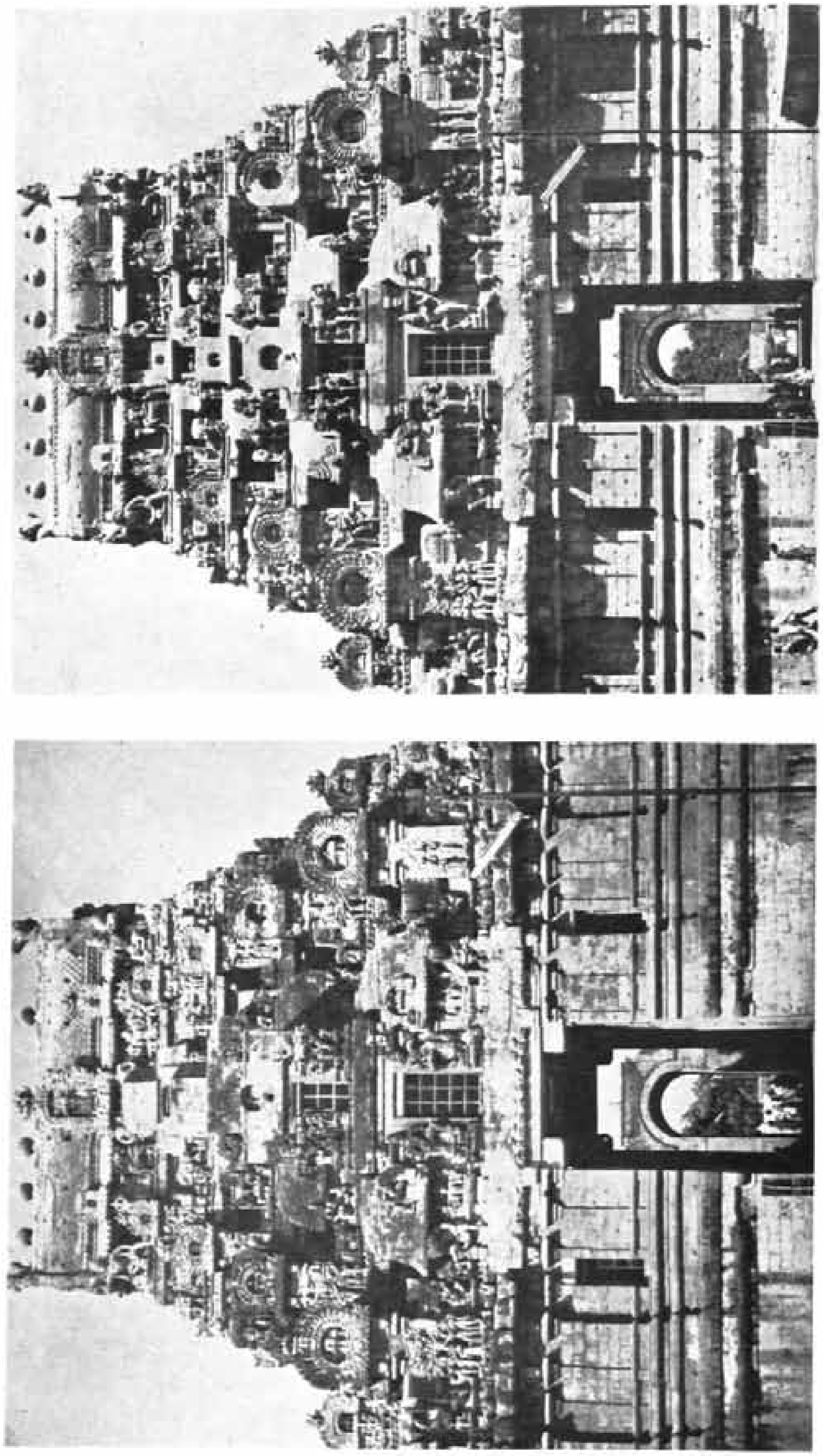


B



A

Narasamangalam, rock-cut cave: A, before and B, after mending. *See p. 145*



A B

Thanjavur, Brihadisvara temple: A, before and B, after conservation. *See p. 144*



A



B

Pachad, Jijamata palace: A, *before and* B, *after repairs*. *See p.* 146

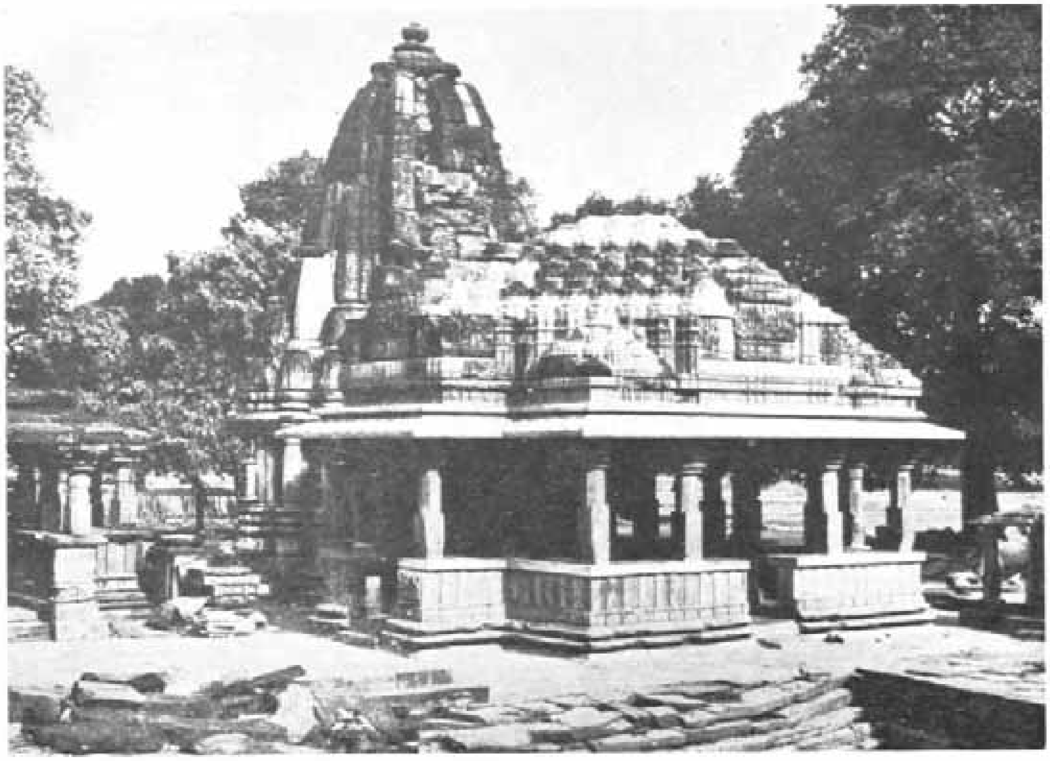


A



B

Lothal, excavated remains: A, before and B, after conservation. See p. 147



A



B

Arthuna, Nilakantha Mahadeva temple: A, *before and* B, *after conservation.* *See p. 147*



A



B

Kumbhalgarh, Golerao temple: A, *before and* B, *after conservation.* *See p. 150*

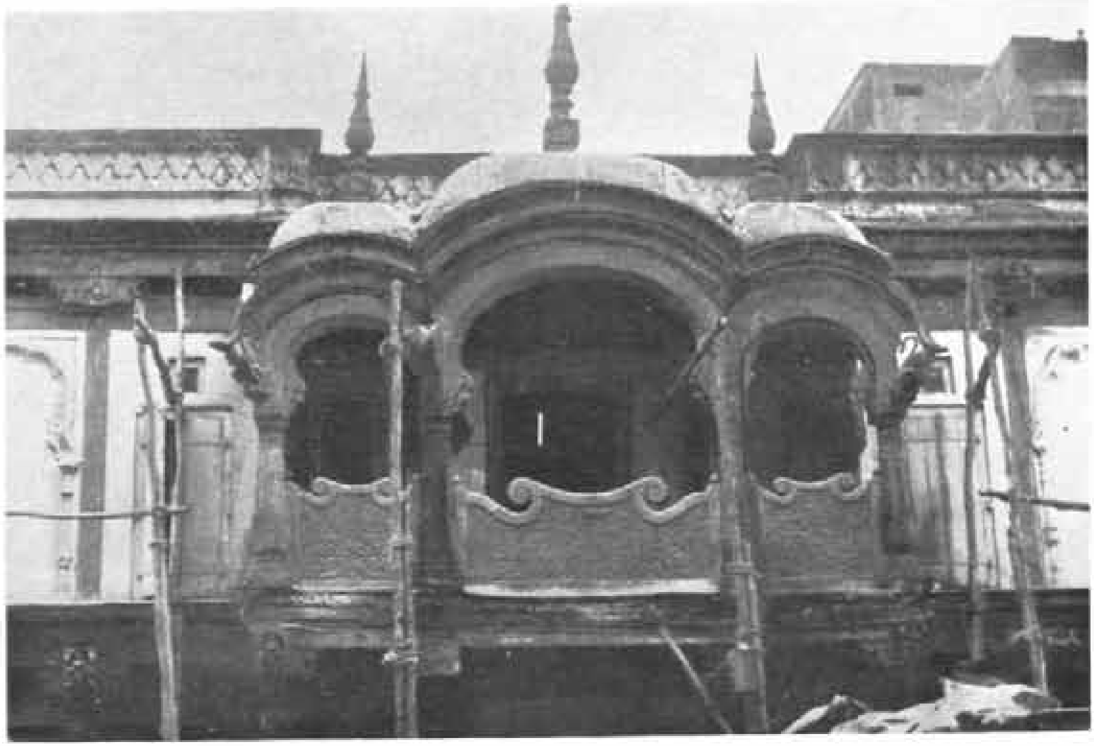


A

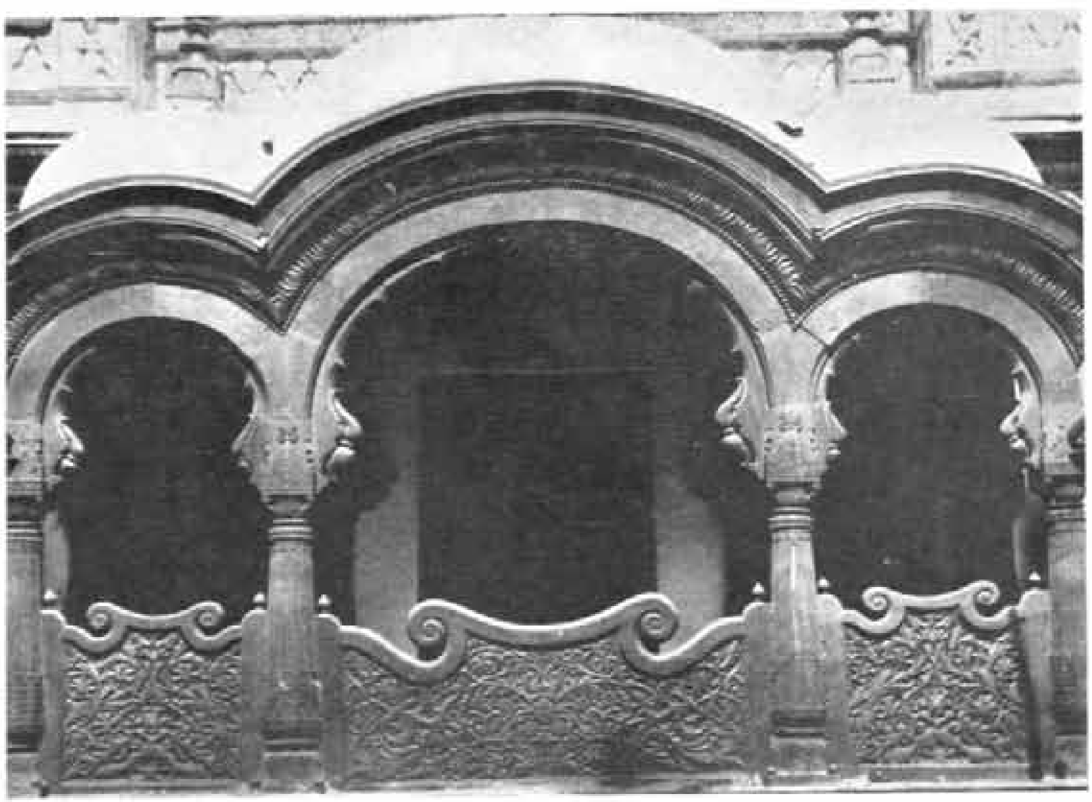


B

Sant, group of temples : A, *before and* B, *after clearance of debris.* *See p. 151*

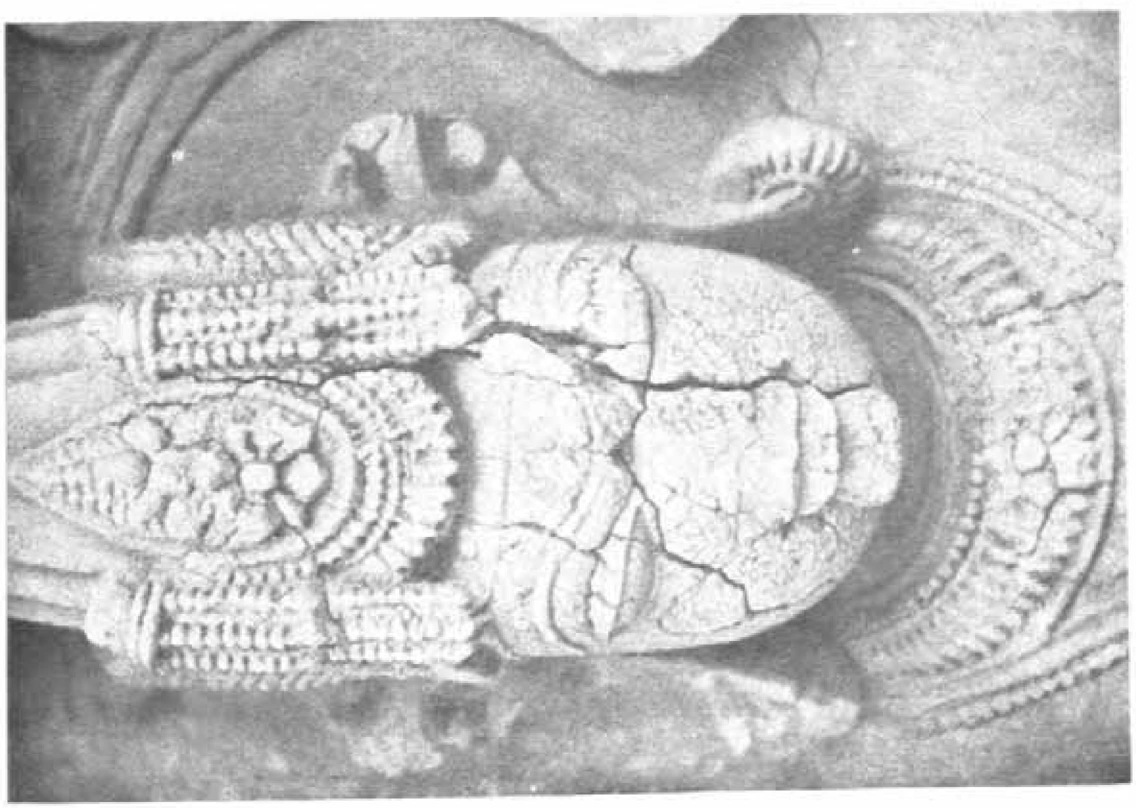


A



B

Pune, Vishrambagwada: A, *before and* B, *after conservation.* *See p. 153*

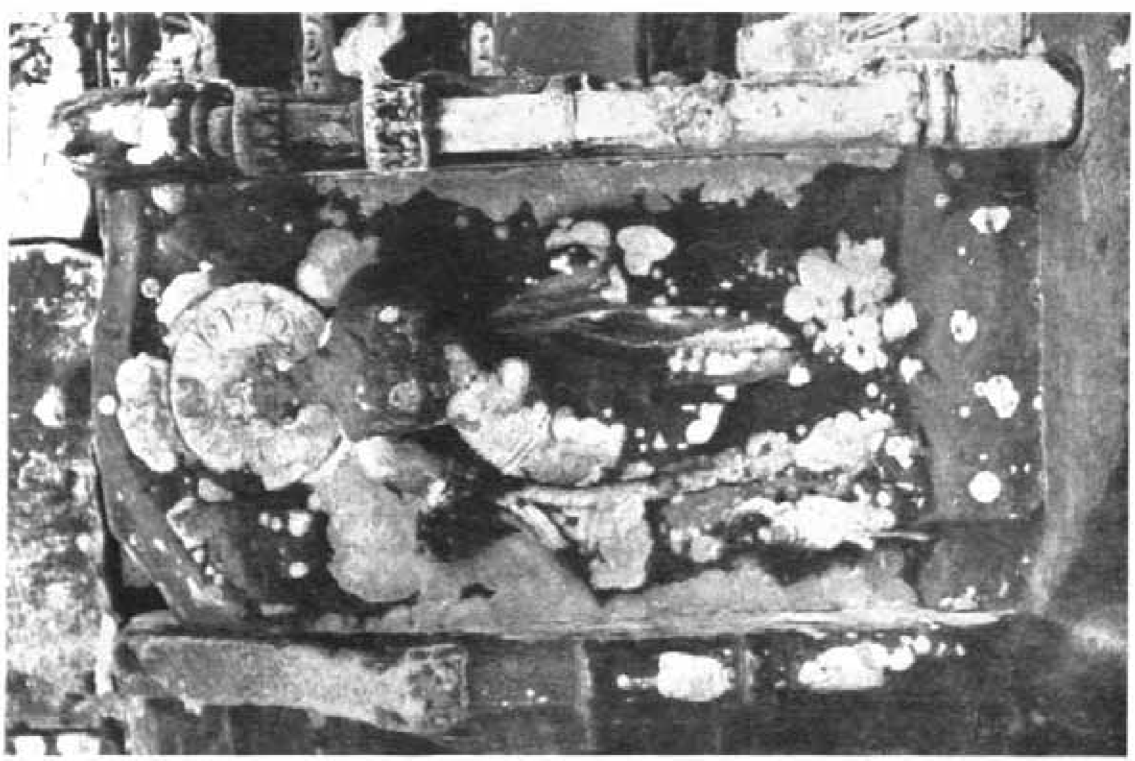


A

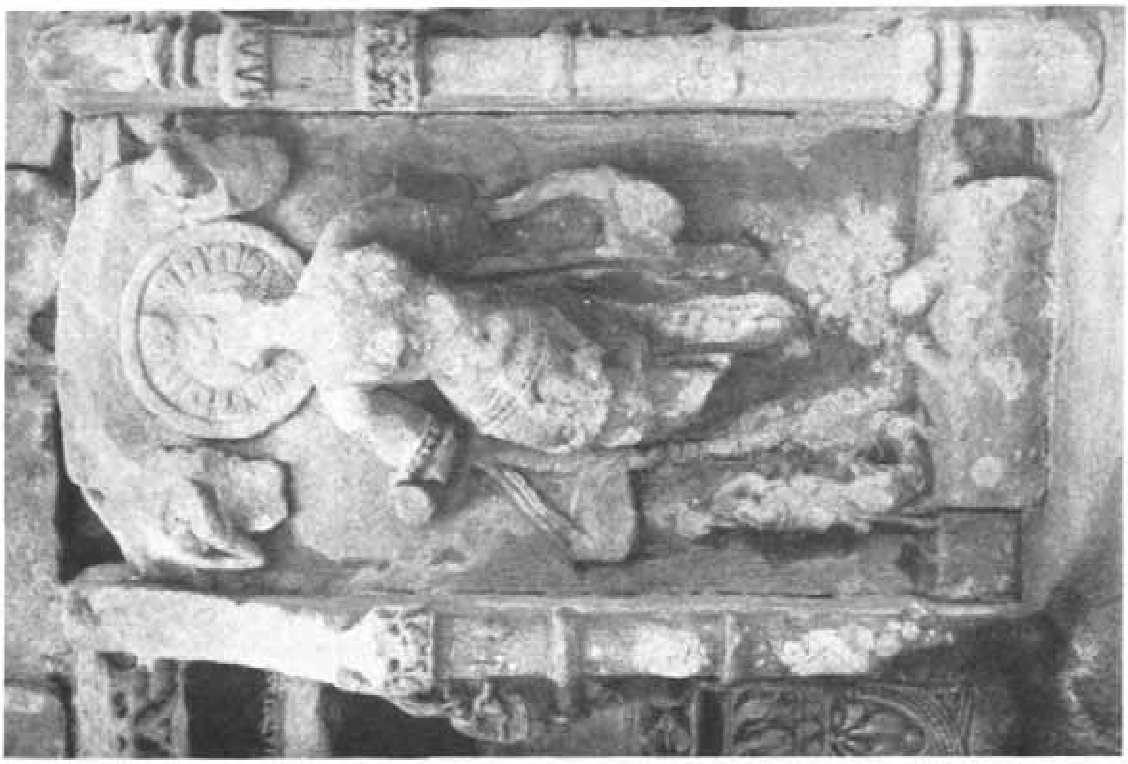


B

Janjgir, Vishnu temple : A, *before and* B, *after filling of cracks* *See p. 156*

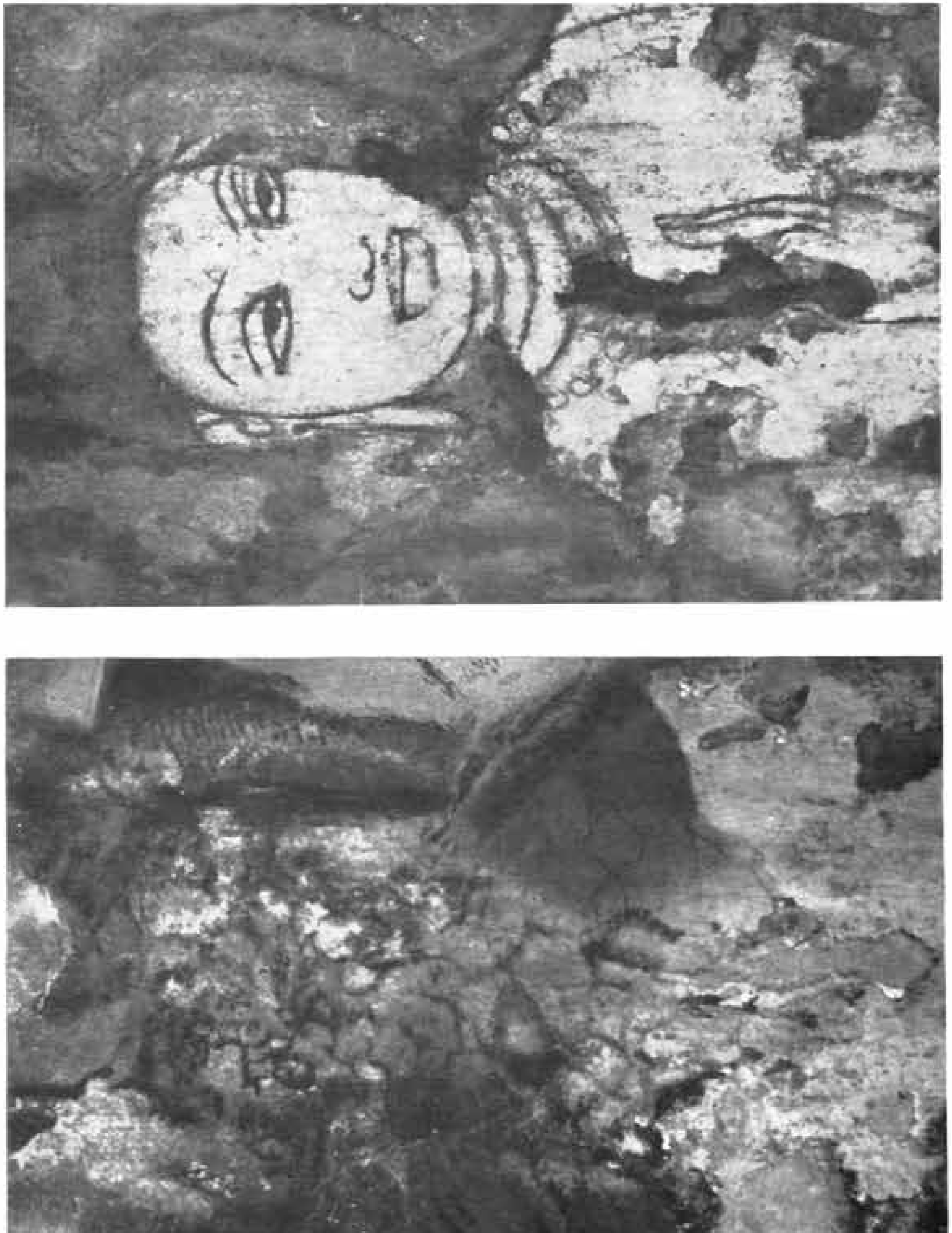


A



B

Udaipur, Nilakanthesvara temple : A, before and B, after chemical treatment. *See p. 157*



A B

Ajanta, Cave 6: A, before and B, after chemical treatment of painting. *See p. 157*



A



B

Ajanta, Cave 17: A, before and B, after chemical treatment of painting. *See p. 157*